THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

EDITORIAL STAFF

WARREN L. BAKER
Editor
J. KENT RIDLEY
Managing Editor

ASSOCIATE EDITORS

L. J. LOGAN — BRAD MILLS
WM. V. GROSS

DISTRICT EDITORS

B. F. LINZ.....Washington
GRADY TRIPLETT, FRANK TAYLOR, JACK CASBURN.....Tulsa
H. H. KING.....Fort Worth
W. E. GREEN.....Los Angeles
EARL S. POST.....San Antonio
R. W. BYRAM.....Austin
CHAS. LEYENDECKER.....Houston

PUBLISHED BY
THE GULF PUBLISHING COMPANY
HOUSTON, TEXAS

R. L. DUDLEY, *President*
A. L. BURNS, *General Manager*
S. W. ROBINSON, *Editorial Director*

Staff correspondents at all important points.

Member Audit Bureau of Circulation
Member Associated Business Papers, Inc.

BRANCH OFFICES

NEW YORK.....250 Park Ave.
PITTSBURGH....Standard Life Bldg.
CHICAGO.....332 S. Michigan Ave.
LOS ANGELES.....Haas Bldg.
TULSA.....Hunt Bldg.
FORT WORTH.W. T. Waggoner Bldg.
SAN ANTONIO.....112 Jefferson St.
WASHINGTON.....Albee Bldg.

ADVERTISING STAFF

DICK SWINSKY.....New York
W. W. PIGUE.....Pittsburgh
T. W. NELSON.....Chicago
J. F. CARTER, JR.....Tulsa
W. E. GREEN.....Los Angeles
CHAS. WYATT.....Houston
WM. ATCHESON.....Houston

CIRCULATION DEPARTMENT

J. T. WAGONER.....Manager

SPECIALIZED OIL JOURNALS
Published by
THE GULF PUBLISHING COMPANY

The Oil Man's Calendar

APR. 26–28	Western Petroleum Refiners Association, Hot Springs, Arkansas.
MAY 6–7	American Petroleum Institute, Division of Production, Eastern District, Columbus, Ohio.
10–16	American Gas Association, Natural Gas Department, Kansas City, Missouri.
19–21	Natural Gasoline Association of America, Tulsa, Oklahoma.
23–27	National Association of Purchasing Agents (Oil Company Buyers Group), Pittsburgh, Pa.
JUNE 1–3	American Petroleum Institute, Mid-Year Meeting, Colorado Springs, Colorado.
10–12	Pennsylvania Grade Crude Oil Association, Sailing from Buffalo, New York.
11	Interstate Oil Compact Commission, Santa Fe, New Mexico.
14–19	Second World Congress of Petroleum, Paris, France.
25–27	National Oil Scouts Association, Dallas, Texas.
JULY	Seventeenth International Geological Congress, Moscow, U.S.S.R.
SEPT. 15–17	National Petroleum Association, Hotel Traymore, Atlantic City, New Jersey.
SEPT. 27 OCT. 1	American Gas Association, Cleveland, Ohio.
OCT. 11–16	Oil World Exposition, Houston, Texas.
14–16	Independent Petroleum Association of America, Houston, Texas.
29–30	Mid-Continent Oil and Gas Association, Texas Division, Dallas, Texas.
NOV. 9–12	American Petroleum Institute, (Annual), Chicago, Illinois.

Contents « April 19, 1937

Volume 85, Number 6

THIS WEEK 9

EDITORIAL 16

GENERAL NEWS:

Union Rivalry—A. F. of L. Starts Its Active Drive in Industry.. 10

Wagner Act Decision Seen as Paving Way for Revival of NRA Rules 10

New Method for Prorating Gas in Panhandle Field Suggested... 11

Removal Refused—Carlisle to Appear in Federal Court May 14.. 12

Coast A.P.I. Meeting—Engineers Suggest Possible Operating Improvements 13

Men In The Industry's News..... 57

Squeaks From the Bull Wheel.....112

ENGINEERING AND TECHNICAL:

Selection of Size of Oil Strings for Wells in California..... 18
BY ERNEST K. PARKS

Chemical Clean-Out of Oil Wells in California..... 23
BY M. W. MORRIS

A Trip to Anahuac—One of the Most Scientifically Operated Fields in Gulf Coast, Part 4..... 39
BY CHARLES B. LEYENDECKER

Pipe Plant Reclamation 50
BY K. C. HAYES

MARKETS AND STATISTICS 61

WORLD DEVELOPMENTS 66

FIELD DEVELOPMENTS 68

NEW PRODUCTS AND MANUFACTURERS NEWS.....109

Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

Copyrighted 1937 by The Gulf Publishing Company.

THE WEIGHT INDICATOR WITH LABORATORY ACCURACY AND OIL FIELD RUGGEDNESS . . .

You CAN'T Compromise WITH ACCURACY

Your weight indicator is either accurate or NOT accurate . . . there is no compromise, and "half accuracy" is not enough! In the Martin-Decker "Clipper" you get the complete CUSTOM-MADE accuracy of a weight indicator to fit your particular need, for in the "Clipper" you have always at hand a choice of calibrated dial rings to meet every condition. Ten easily changed dials nested within the water-tight case allow DIRECT READINGS IN POUNDS OR POINTS for any line (whether 1", 1⅛" or 1¼" for drilling or ¾" or ⅞" for production work), and in any "string-up" from 4 to 10 lines, eliminating haphazard guesswork and estimations.

This is only one of the many features that make the new "Clipper" the most accurate weight indicator. For complete information, write for new literature.

THE WEIGHT INDICATOR
MARTIN DECKER CORP.
LONG BEACH CALIFORNIA

San Joaquin Valley. A. F. McQUISTON, Bakersfield, California
Mid-Continent Distributor REED ROLLER BIT COMPANY Houston, Texas

LOOKING AHEAD

WITH THE EDITOR

Western Kansas to Front.
Men Also Change Minds.

A TRIP through Western Kansas and a study of its operations and developments during the past 18 months or so is certainly amazing—the dust storms have failed to retard drilling and its oil development is moving forward like a Gulf of Mexico hurricane. Did you know that during 1936 more new fields were found in Western Kansas than in any other area of the United States? There were 54 new fields discovered, which boosted the total number of fields to approximately 200. And, Western Kansas' first oil well was completed but 13 years ago. Moreover, active development did not commence until 10 years ago. We are going to tell you a great deal about the territory May 3—in a special Western Kansas number. Historical sketches of every field is to be presented in a fashion similar to THE OIL WEEKLY'S Gulf Coast issues. Then, there will be a seven-color map showing each field and the geological formation from whence it proves. More about this big and important book next week—but, in the meantime you had better order extra copies if you want them. No promises for additional copies after the book is printed are being made. No sir, at least not by us at the rate they are being ordered.

LAST week in preparing copy for this column we failed to look far enough in front of our noses, and as a result some of the editorial features we promised for this issue are missing. However, we feel that the data coming out of the Pacific Coast district meeting of the American Petroleum Institute, Division of Production, is of sufficient interest and importance that we will be forgiven by our readers because the space has been given to papers presented there. At this time we assure all of you that Dorsey Hager's discussion of future oil production of the United States, and advancements in water well operations, will be published next week.

PETROLEUM DICTIONARY
By HOLLIS P. PORTER
Member of American Society of Mechanical Engineers, American Petroleum Institute.

This work grew out of a demand for some source of definition for the terms used by the petroleum industry. It contains over 3,000 definitions of words used constantly by all phases of the petroleum industry. It was published in 1936 and has found its way into engineering departments, legal departments and land departments of producing concerns, as well as to the desks of executives of the petroleum industry.

Manufacturers also find it valuable for reference. Advertising agencies find it a valuable addition to the library.

253 Pages, 6 x 9, cloth bound, Price Postpaid, $3.00
Send order to

THE GULF PUBLISHING CO., P. O. Box 2811, Houston

THIS WEEK

» HENRY FORD long has had his own iron mines, tin mines, hickory trees and glass works. Now he has his own gasoline wells. He owns 73 acres in the Wilmington, California, field, on which General Petroleum Corporation has completed one producing well. Ten locations have been made and seven wells are under way. The water tank in the distance is on the Ford property, and the brick building in front of it is the Ford assembly plant. The covered derricks are Henry Ford 1 and 2. It is planned to slant some of the wells underneath the assembly plant. The structure is anticlinal, and the Ford property is right on top of it. (Photograph courtesy of H. J. Steiny).

THE American Federation of Labor last week entered into active rivalry with the Committee for Industrial Organization in the oil industry. A. F. of L. leaders opened a competing unionization drive in Houston. Meanwhile, C. I. O. continued to push its campaign. Tending to make difficult the success of these organizations was the wage increases given without demand by larger concerns. **Page 10.**

HEARINGS on the measure to make the Connally contraband oil act a permanent proposition are to start Aril 27 before the Cole subcommittee of the House Interstate and Foreign Commerce Committee. The Senate has already passed the bill. It is anticipated that independent marketers will continue their fight on the measure, that C. I. O. labor union will try to attach an amendment for 36-hour working weeks, and that oil companies in general will resent favorable testimony. **Page 10.**

THE future trend of the industry's markets is uncertain. On one hand there is talk of an immediate increase in crude oil prices. While on the other hand, oil stocks are still increasing and production has not been as well balanced with demand as expected. **Page 61.**

ANNUAL reports covering 1936 earnings of oil companies continue to be made public, and survey shows that net income of 20 leading concerns was up 53 percent over those of 1935. Meanwhile, a few statements for the first quarter of 1937 have been released, and show higher earnings than in the same period of 1936. **Page 64.**

THE Walsh bill, giving the Navy the right to consolidate naval reserves and to make exchanges of land for areas now leased, has been passed by the Senate and sent to the House of Representatives for concurrence. **Page 12.**

CURRENT SITUATION

Outlook. — Remains favorable; markets are firm.

Crude Market.—Talk of higher prices.

Refined Oil Markets. — Steady; prices on upward trend.

Crude Production. — Up 25,000 barrels to 3,426,425 daily.

Crude Runs to Stills.—Unchanged at 3,005,000 barrels daily in week ended April 10.

Crude Stocks.—Up 3,787,000 barrels in week ended April 3; gain of 12,163,000 in 10 weeks.

Gasoline Stocks.—Down further in week ended April 10, to 82,579,000 barrels.

Gas and Fuel Oil Stocks.—Down 1,224,000 barrels in week ended April 10, to 94,581,000 barrels.

Drilling.—Completions down 61 last week; total 534 wells.

See **MARKET SECTION** *for Details*

A NEW method of prorating gas in the East Panhandle was suggested at a hearing last week. The proposed method would use a formula with 50 percent acreage plus 50 percent potential, with the acreage factor to be corrected to the average pressure of the field. It was stated the method would meet all requirements, including those of the United States Supreme Court. **Page 11.**

DRILLING muds, acidization of wells, reconditioning of wells, wire line coring advancements, rotary table electric power requirements, influence of casing sizes on production rates and practices, and the reclamation of tubular goods were the engineering problems discussed at the Pacific Coast district meeting of the American Petroleum Institute, Division of Production last week. **Page 13.**

CHEMICAL treatment to increase well productivity has only recently been introduced in California fields, but it is proving successful in cleaning out material which obstructs the entrance of the crude oil into the cased hole. It has been found that careful diagnosis of well conditions will materially reduce the percentage of unsuccessful treatments. **Page 18.**

ONE California company is economically using a fixed pipe reclamation plant. More than 1000 miles of pipe have been reconditioned. The practices used in reclamation of casing, tubing, drill pipe and line pipe are of interest, as is the equipment employed for this purpose. **Page 50.**

Union Rivalry

A. F. OF L. STARTS ITS ACTIVE DRIVE IN INDUSTRY

LEADERS of the American Federation of Labor last week in the oil country entered into active rivalry with their alienated comrades who operate as the Committee for Industrial Organization.

The lieutenants of William Green appeared upon the derrick studded scene in the Southwest and began bidding against the representatives of John L. Lewis for the favor of oil company workers.

Undaunted by a mailed threat from Houston to "get out of the picture" . . . or be killed, John P. Frey, of Washington, vice president of the A. F. of L., journeyed last week from the national capital to the city whence came the threat, and launched his organization's national campaign to induce oil workers to join hands with the William Green group.

"We will use educational methods," stated Frey, "to get men to see that their welfare lies in tying to the A. F. of L."

The oil industry drive of the A. F. of L. is but a part of a general campaign that will embrace the whole industrial field of the country.

C.I.O. Campaign

Meanwhile, the Lewis-led Committee for Industrial Organization further pushed the oil industry campaign it had started a week before, with Washington headquarters directing organization activities in seven strategic points: Houston and Kilgore, Texas; Oklahoma City; Long Beach, California; Parco, Wyoming; Ashland, Kentucky; and Hammond, Indiana.

Support Claimed

From the council chambers of the C.I.O. and of the A. F. of L. came politician-like claims of support.

From the oil fields and the refining centers came some assertions that small progress was being made by the unions in organizing the oil workers; that the oil workers were in many instances unresponsive, because wages are comparatively favorable and because high rates of activity prevail in all branches of the oil industry.

Oil Field Wages Higher

Naturally tending to make difficult the work of the union organizers were recent increases of salaries and wages announced by many of the oil companies. Additional increases of that kind were inaugurated last week, affecting thousands of oil company workers. Companies that lately joined in this wage-raising movement included Pan American Refining Corporation, Shell Union Oil Cororation and subsidiaries, The Texas Company, Humble Oil & Refining Company, United Gas Company, Gulf Oil Corporation, Sinclair Refining Company, Magnolia Petroleum Company, Stanolind Oil & Gas Company, Pure Oil Company, and others.

Wagner Act Decision Viewed

The United States Supreme Court decision last week upholding the Wagner labor relations act was looked upon by some as likely to stimulate the oil industry organization drives of both the C.I.O. and the A. F. of L.

"Any decision like that," said John P. Frey at Houston, "is bound to greatly stimulate labor organizing moves."

The decision at the same time was hailed by government spokesmen as a step toward industrial peace, since the law has been clarified for both employers and employes.

Provision of Labor Act

The Wagner act guarantees workers the right to organize and to bargain collectively, and to protect that right, the federal government provides legal machinery. The act is administered by a labor board headed by J. Warren Madden, chairman. The board is concerned chiefly with determining employe representatives for collective bargaining purposes, and with the elimination of specified unfair labor practices.

The act brands as unfair labor practices any effort of employers to interfere with the organization and bargaining rights of workers, domination or financial support of labor organizations by companies, discrimination in hiring and firing to encourage or discourage membership in labor unions, discharging of employes who have given testimony under the act, and refusal to bargain collectively.

The labor board hears complaints from workers or workers' organizations, and issues "cease and desist" or-

CONNALLY BILL

Hearings in House to start on April 27

Washington, D. C.—Hearings on the measure to make the Connally contraband oil act permanent will begin before the Cole subcommittee of the House Interstate and Foreign Commerce Committee April 27, it was announced by Congressman Cole April 15.

Present plans are to keep the hearings as brief as possible and to conclude by the end of that week in view of the lengthy discussion of the subject before the Senate committee.

Secretary of the Interior Harold L. Ickes and Colonel Ernest O. Thompson of the Texas Railroad Commission, both of whom appeared before the Senate committee to urge that the act be made permanent, are expected to be the first witnesses to appear before the House group.

To Try Labor Rider

It is expected that the independent marketers and jobbers who opposed the bill on the Senate side will marshal their forces for another attack on the measure, and that Harvey Fremming, president of the International Association of Oil Field, Gas Well and Refinery Workers, will submit his proposal for an amendment fixing the working week at not more than 36 hours and providing for minimum wages.

Fremming's proposal to that effect was turned down by the Senate committee on the ground that the inclusion of new provisions in the legislation might serve to delay its enactment.

WAGNER ACT DIVISION

Seen as paving way for revival of NRA rules

Washington, D. C.—Taking the viewpoint that production, while of itself intrastate in character, was so closely linked to interstate commerce as to be a proper subject for regulation by Congress under the interstate-commerce clause of the Constitution, the Supreme Court on April 12 upheld the validity of the Wagner Labor Relations Act in a series of opinions seen as paving the way for enactment of a new NRA or of legislation regulating the hours and wages of production employes.

Split five to four on four of the five cases decided, the majority of the court, in an opinion read by Chief Justice Hughes, declared that "it is a familiar principle that acts which directly burden or obstruct interstate or foreign commerce, or its free flow, are within the reach of the congressional power. Acts having that effect are not rendered immune because they grow out of labor disputes."

Broad View Taken

While the cases before the court revolved around the effect of labor disputes on interstate commerce and not the character of work in which a particular employe may be engaged, the majority took a broader view of the relationship between production and interstate commerce, declaring that:

"Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control."

Dissenters Say Power Transcended

The four dissenting justices, in a minority opinion, held that Congress transcended the powers granted it in enacting the Wagner act.

"Obviously," it was declared, "what is determined as to these concerns may gravely affect a multitude of employers who engage in a great variety of private enterprises—mercantile, manufacturing, publishing, stock raising, mining, etc. It puts control over purely local industry beyond anything heretofore deemed permissible."

ders, while relying on courts to enforce its orders.

The rulings of the Supreme Court with regard to the Wagner act grew out of litigation over orders issued by the labor board.

William Green, president of the A. F. of L., on learning of the decision on the Wagner act, asserted: "Labor now will be free to organize without fear of discrimination and persecution. It means the end of the company unions."

New Labor Legislation Expected

In the light of the decision, it appeared that the future would bring renewed efforts at Washington to enact new NRA type legislation regulating minimum wages and maximum hours, under the broadened interpretation of the "interstate commerce clause." This decision, coupled with the earlier decision of the Supreme Court upholding the state of Washington's power to regulate women's working hours, also was expected to encourage legislation by the various states on wages and hours.

Despite the Wagner act decision, it was stated that President Roosevelt proposed to proceed with his plan for reorganizing the Supreme Court, since there was no guarantee that other administration aims, such as regulation of minimum wages and maximum hours and prohibition of child labor, would be upheld.

It was predicted, moreover, that the president would not wait for action on his court plan before proposing wage and hour legislation.

MALODORANT BILL

Requiring usage in all Texas gas passes House

Austin.—The use of a malodorant in gas sold in Texas was finally passed by the House last week.

The bill approved reads as follows: "That from and after the final passage and approval of this Act, in order that the danger of escaping combustible gases may be minimized and to facilitate the quick detection of gas leaks, it shall be unlawful for any person or persons, firm, corporation, municipality of otherwise, association or any distributing system, unit, or plant of any kind in this State engaged in the business of handling, storing, selling, or distributing natural and liquefied petroleum gases, and other odorless gases, for private or commercial uses, or supplying the same by pipe lines or otherwise to any public building or buildings, or to the general public, to handle, store, sell or distribute the same without first being effectively odorized by an agent of such character as to positively indicate by a distinctive odor the presence of gas down to concentrations in air of not over one-fifth the lower limit of inflammability and the agent shall be non-toxic and non-corrosive, and must be approved by the Railroad Commission of Texas after thorough tests and investigations made by them or upon their order, and set forth and described in any orders, rules and regulations promulgated by said Railroad Commission of Texas under the terms and provisions of this Act."

New Method

FOR PRORATING GAS IN EAST PANHANDLE FIELD SUGGESTED

Austin.—A new method of prorating gas in the East Panhandle field was presented last week at a hearing before the Texas Railroad Commission. V. E. Cottingham, director of production for the Railroad Commission, said that investigation had shown that a formula with 50 percent acreage plus 50 percent potential with the acreage factor corrected to 238.7 pounds, (the average pressure for the field) would, in his opinion, be the most satisfactory formula that has been suggested so far.

Would Meet Requirements

The new formula was offered as a method of proration which would meet the requirements of the statute, that both acreage and potential be considered, and the findings of the United States Supreme Court in the Consolidated Gas Company case, that pressure could not be omitted as a factor in preventing the drainage of gas from the various leases.

There are 398 gas wells located on 43,266 acres in the East Panhandle field. The acreage is based on an allowance of 160 acres for each well, although the average unit on which a well is located is approximately 108 acres.

Of these wells, 360 are connected to gas gathering lines. Last year 357 of them were productive, and the remainder were off production because pressures were so low that the gas would not flow into the line. The area produced during 1936, from these 357 wells, a total of 44,491,512,000 cubic feet of gas.

Must Distribute Production

The survey conducted by Cottingham proved to his mind, "That unless the production of gas from the field is distributed uniformly, there will be undue drainage between properties, and physical waste will result from one or a combination of the following conditions:

1. The abuse of correlative rights of owners of gas wells by drainage.

2. Through failure to recover the greatest ultimate quantity of gas."

The acreage adjustment in the Formula Cottingham recommended would result in increasing the acreage allowance to those wells whose pressure was higher than 238.7 pounds, and would decrease the acreage allowance to those wells whose pressure was below this figure. The potential allowance would not be affected.

In Table 1, each of the six proration formulae suggested is listed, together with the distribution of allowables that would take place through the operation of each plan. A study of this Table will indicate that Formula "F", the formula recommended, would more nearly adjust allowables to the acreage and potential of the wells affected.

Suggest Another Formula

Phillips Petroleum Company suggested another formula which it thought would be more satisfactory. This formula provides for allocating gas on the basis of acreage times potential, which combined factor would represent 80 percent of the field allowance, plus a potential factor on which 20 percent of the gas would be distributed.

Much of the discussion at the hearing was given over to control of oil wells in the Panhandle, many of which are making unusually high volumes of gas. Cottingham testified that the average gas-oil ratio for wells in this area was in excess of 9000/1.

He said that this condition was due to two causes—either poor completion or inherently high ratios resulting from the location of a well near the gas-oil contact.

Cottingham testified that these conditions must be controlled if drainage of gas from the dry gas area to the oil producing area is to be prevented. He pointed out that during 1936 the oil

TABLE 1

Allowable distribution that would take place under each of the six proration plans suggested for the East Panhandle field.

No. Wells	GATHERER	*Acreage	*Potential	PRORATION METHOD					
				A	B	C	D	E	F
14	Consolidated	3.08	5.14	3.94	3.71	3.25	3.66	3.83	3.91
140	Lone Star	33.41	44.53	35.09	38.02	35.09	38.52	42.52	39.26
60	N.T.U.	14.84	20.97	16.77	17.21	15.81	16.97	19.76	17.51
60	Phillips	18.39	13.53	18.12	16.10	16.08	15.14	14.97	15.86
23	Coltexo	8.02	.96	2.89	2.99	4.92	3.33	1.69	2.15
12	Smith Bros	3.94	5.23	3.59	3.16	2.70	3.04	2.96	3.38
89	Miscellaneous and unconnected	18.32	9.64	19.60	18.81	22.15	19.34	14.27	18.32

* Percentage of the total field acreage and potential connected by the gatherer of gas.
A—50 percent acreage plus 50 percent potential.
B—50 percent acreage plus 50 percent potential adjusted for pressure of 400 pounds.
C—50 percent acreage plus 50 percent pressure.
D—25 percent acreage plus 25 percent potential plus 50 percent pressure.
E—50 percent acreage plus 50 percent potential, with the allowable adjusted to 238.7 pounds.
F—50 percent potential plus 50 percent acreage, with the acreage adjusted to 238.7 pounds.
238.7 pounds is the arithmetical average individual well pressure.

area produced more than 50 percent of the total gas produced in the East Panhandle field, despite the fact that it includes less than 15 percent of the total gas and oil area which is productive.

Another oil problem which Cottingham condemned is the practice of putting back-pressure on some of the pumping wells and allowing them to produce wet gas instead of oil for a large portion of each day. He said that this condition was wasteful and served to drain the gas into the oil field.

While Cottingham did not agree that the proposed formula for the Panhandle would apply without adjustment to every gas field, he did express the opinion that it could be adjusted to apply to any gas field in the state.

PASS WALSH BILL

Senate gives Navy right to exchange reserve land

Washington, D. C.—Without opposition, the Senate on April 15 passed the Walsh bill giving the Navy Department authority to consolidate the naval reserves and to make exchanges of land with Standard Oil Company of California in Reserve No. 1, and sent the measure to the House of Representatives for concurrence.

Passage of the bill followed an unsuccessful attempt to secure its consideration on April 12, which move was defeated by an objection of Senator McNary of Oregon who, while expressing no opposition to the legislation, stressed his desire to familiarize himself with it more thoroughly before voting. As the measure was on the unobjected calendar, his objection automatically suspended further consideration at that time.

Extends to All Reserves

The bill, as passed by the Senate, extends to the naval oil-shale reserves all applicable provisions of law covering the naval petroleum reserves and gives the secretary of the navy jurisdiction over all government lands and leases within the reserves and the authority to conserve, develop, use and operate the same.

It further authorizes the Navy Department to enter into agreements with operators on adjoining private lands for the conservation of oil and gas on the government's lands; to exchange government lands in Reserve No. 1 for private lands in the reserve; to acquire privately owned lands in the reserve by purchase or condemnation, using therefore, moneys due the government as royalties from any of the reserves or due because of the wrongful extraction of oil and gas from lands in Reserve No. 1.

Will Not Renew Leases

All existing leases in the reserve would be terminated at the end of their initial periods of 20 years by voiding the options for renewals, but the lands involved may be re-leased under such terms as the secretary may prescribe, with the preferential right in the former lessees to leases if and when the lands are re-leased. The new leases, however, will contain provisions giving the secretary authority to alter or modify the rate of prospecting, developing and production. It is provided that no leases of lands nor any benefits therefrom shall extend to foreigners whose governments do not grant reciprocal privileges to American citizens.

No lease, contract, exchange or purchase or condemnation shall be made except with the approval of the President, it is provided, and the department is to report annually to Congress all agreements, purchases or condemnations made under the act.

MORE TAXES UNLIKELY

Senate committee has refused to vote on bill

Austin.—Refusal of the Senate State Affairs Committee to vote on the oil tax bill last week indicates that no additional taxes on the oil industry are likely to be added at this session.

A brief hearing was held at which independents appeared and urged that the oil industry is now paying more than its fair share of taxes. Three members of the committee attempted to obtain a vote on the bill which was passed by the House providing for a six cent tax, but a motion to adjourn was passed before any action was taken.

REMOVAL REFUSED

Carlisle to appear before federal court May 14

Houston.—O. H. Carlisle, Houston division manager of Gulf Oil Corporation who is scheduled to appear for rehearing before District Federal Judge T. M. Kennerly in Houston May 14 on the question of whether the defendant should be committed, was discharged April 15 by United States Commissioner W. F. Carothers after a hearing of more than a week's duration in which special federal attorneys from Washington sought Carlisle's removal to Madison, Wisconsin, to face charges along with 55 other oil men under federal indictment for violation of anti-trust laws in connection with the so-called "oil conspiracy" case.

Judge Kennerly told government counsel he would accept the case May 14 on the old record, as made before Commissioner Carothers, or starting anew, but that in the latter case he would appoint a master to receive the testimony and evidence and that Carothers probably would be that master.

Government attorneys plan to file a new complaint against Carlisle under the indictment and secure his rearrest. Defense counsel are prepared to post bond immediately.

If Judge Kennerly, following the May 14 hearing, should decide Carlisle should be committed, it would then become the duty of the district judge under the statute to remove Carlisle. But, if his ruling should agree with the commissioner's then Carlisle would be free in this federal district, unless the circuit court also agreed to rehear the matter. He would be subject to arrest in other federal districts, however, until such time as the Madison trial comes to conclusion, or unless the government in the meantime moves dismissal of the indictment against him.

Carothers' written opinion, delivered with his decision to discharge Carlisle, emphasized the lack of validity of the government's case as disclosed by the indictments and testimony presented before him. He charged that the government counsel "see through prejudiced glasses." The opinion declared that after zealously trying to find some fire under the smoke and failing to do so, it was the commissioner's belief that there was no criminality involved in the acts of the defendant and his company.

"It is a physical impossibility that the purchases made (in East Texas field) contributed in any improper way to the price rise complained of. It was some six months after the rise in spot markets in East Texas before any appreciable increases in purchases by Mr. Carlisle appeared . . ." the opinion stated in part.

Set Up Under NRA

Referring to the first buying program, the opinion set up the following: "The 1934 program was set up by the federal government under the NRA—and the Sherman anti-trust law was expressly inapplicable as to activities thereunder. The Supreme Court . . . never would hold that . . . acts performed under the protection of the suspension (of the Sherman anti-trust law) are criminal."

Speaking of the East Texas Marketing Association founded by Henry May, the opinion stated in effect: "The association could not have been worth a penny to the alleged conspiracy of the major companies to return to and buy in this field. They could have shut their eyes and bought from anybody and everybody (after the Connally act) and it would have served their purposes. It was not a matter of who they bought from, but the fact of their reentry into the field which helped to raise prices. Therefore, every reference to the East Texas Refiners Association is gratuitous, serves no good purpose, and might as well have been omitted."

"CONSPIRACY" CASE

Closing arguments on April 20 in Madison

Madison, Wis.—Federal Judge Patrick T. Stone will hear closing arguments April 20 on defense motions in the government's "oil conspiracy" case, which were postponed last week from Thursday and Friday.

Judge Stone will also hear pleas of several of the 71 individual defendants charged in two sets of indictments with violation of anti-trust laws in the operation of buying programs in the East Texas and Mid-Continent fields. Three of the individual defendants, officials of the Standard Oil Company of Indiana and the Mid-Continent Petroleum Corporation, entered pleas of innocent last week. Fifty-seven others had previously pleaded innocent, and similar pleas have been entered on behalf of the 26 major oil companies and 3 trade journals also indicted.

At the conclusion of hearings this week the court is expected to set the date for start of trial on one of the indictments.

Coast A. P. I. Meeting

ENGINEERS SUGGEST POSSIBLE OPERATING IMPROVEMENTS

Los Angeles.—Important drilling and producing trends and problems were discussed at the annual spring meeting of the Pacific Coast District of the American Petroleum Institute, Division of Production, held in Los Angeles, April 13. Much interest was displayed in the technical sessions, and no doubt considerable value was procured from them.

Drilling muds, acidizing of wells, reconditioning of wells, wire line coring, electric drilling power requirements, pipe reconditioning methods, and influences of casing sizes on production rates and practices were discussed.

The morning session was given over to discussion of various drilling problems, and the afternoon meeting was devoted to production practices. In the evening, A. L. Weil recounted the history of the oil industry in California.

Abstracts of each paper presented follow:

★ Acidization increasing in California fields

The paper read by M. M. Morris of Standard Oil Company of California, stationed at Taft, on "Chemical Clean Out of Oil Wells in California," attracted considerable attention, since the oil companies are paying much attention to acidizing. Morris said that during the past 12 months, approximately 500 wells had been chemically treated in California at a cost of about $400,000. He said that despite a rather high percentage of failures, chemical clean out work had proven profitable to the industry. The speaker called attention to the fact that chemical treatment to increase well productivity in California is a new art that has been successful in cleaning out material which obstructs the entrance of production by plugging perforations or faces of sand.

Morris outlined these obstructing substances as follows: Mud sheaths, formed during drilling or redrilling operations; carbonate scale, deposited from water wells, and waxy-asphaltic residues, deposited by crude oil. He said that in many cases treatment failures were found to be the result of ill advised selection of wells or the misapplication of chemical. With more careful diagnosis of well conditions and increased knowledge of proper chemical application, he thought, the percentage of unsuccessful treatments should show a marked decrease. He further thought that where applicable, chemical clean out methods are more efficient than the older mechanical methods and he added that it is believed that they will become an accepted feature of California production practice.

★ California history is traced by A. L. Weil

The high spots of the past 35 years in the industry were given by A. L. Weil, president of General Petroleum Corporation, who addressed the meeting on "History of the Oil Industry in California." He traced development from 1899 to the present time, and pointed out the economic changes that had affected the industry. The early producer had little use for geologists, but he was not entirely without justification in this attitude, since many self-styled geologists were men of little training though of vast pretentions.

Weil stated it is definitely true that during the last 35 years California has gone through a series of cycles ranging from extensive overproduction to acute shortages of oil. Many are apt to ascribe cycle theories to superstition, but this is not true, it was added. He stated that cycles in the oil industry have been due to recurrent forward steps in the science of geology as well as in the art of manufacturing improved drilling equipment.

First Drilling Near Seepages

"The first drilling was done near well defined seepages. As soon as it became generally known that a seepage was a promising place there followed intensive drilling activity, and the resulting production soon outran the current consumption. In a relatively brief period the seepages were all drilled and the natural decline of the existing wells brought on an era of low production. With the improvement in geological science, the geologist soon got away from the necessity of seepages. He first recommended the drilling of structures observable from the surface, whose oil possibilities were indicated by more or less remote outcrops in parallel upraises, and finally there came the scientific devices and other methods of determining hidden structures in the absence of both seepages and surface indications. As each new theory proved its practical possibilities the rush to develop similar areas led to overproduction which continued until the steady increase in consumption crossed the declining production curve, and there followed a shortage until a new theory was developed.

"Coupled with the improvement in geological was, of course, the improvement in drilling technique and in adequacy of equipment. Some of the wells under 1000 feet in depth drilled in the early 1900's had as many as four strings of casing. This difficulty was largely removed by use of the underreamer. Cementing was at first an unknown art. I remember the time when it was the usual practice to drive the pipe into the shale stratum and when that leaked, to put in rope yarn, wire shavings, flaxseed, and other materials of similar nature, which was at worst wholly inadequate and at best a temporary expedient."

Weil discussed the early weakness of pipe, deep drilling, government withdrawal of lands, conservation, and Washington's influence on the oil industry.

★ Several factors enter into well reconditioning

If a well is non-commercial in its present production, there obviously is nothing to lose by repairing, Henry E. Winter, district engineer for Union Oil Company, stated in an interesting paper on "Reconditioning Procedure With Portable Equipment." In the case of a wet well, the several factors to be considered are:

1. The quantity of fluid must be too great for economical or efficient pumping or gas lift.
2. Will shutting off water decrease dehydrating costs?
3. The water may be of a higher head than the oil and tend to shut off oil from coming into the hole.
4. Is shutting off the water likely to shut off the oil?
5. Will shutting off the water protect the zone or surrounding wells in the same zone?
6. Does the production of large volumes of water reduce the effect of water drive in the zone?

The first and second factors can be determined by a production analysis of the well, while the third, fourth and fifth factors must be decided by experience, or knowledge of the particular area, and after the source of water has been located, are often matters of judgment. The sixth factor is one that will be a production problem in the future, and is a part of permeability and production of studies, especially in fields of unit development, Winter stated.

He added that the prospects of the well if repairs are successfully made must be balanced against estimated cost to determine if the contemplated repair

job is justified. The mechanical difficulties likely to be encountered may be determined from the well records, or by a determination of the conditions of the hole. The success of the work is dependent upon detailed subsurface information. Successful results can be accomplished by watching the details of the work as it progresses and correctly interpreting the results of each part of the operation. Arrangement always should be made to test wells on the pump after repairing. The cement bonds are not placed under ideal conditions, and are in the nature of a water seal rather than concrete. Pressure involved in gas lift may break the cement bonds, at least until the well has been tested, and the cement hardened for a few months. Ten days is the usual time allowed for a plug to harden enough to test a well on the pump.

Well Records Important

The paper stressed that well records are important. The original drilling records of the well, production record, and production crew reports should be kept, and of the three the production crew reports probably are the most important. One method that has worked very well was to have duplicate records made of the production crew "clean-out reports," which go to the engineer to be written up as if the work had been performed by a drilling crew. Proper engineering of repair work involves a greater amount of detail work than does a new well.

The success of repair work depends in the last analysis upon the personnel of the crew, the paper stated. The best way to lose money is to assume that any rotary crew out of work, or some "old timer" that does not believe in new ideas but needs a job, can do repair work. The work is dependent upon small details, and if the crew is not sold on the necessity of details and careful measurements, they can easily

Aubert Reelected Chairman

OF PACIFIC COAST DISTRICT A. P. I. DIVISION OF PRODUCTION

Los Angeles.—At the close of the spring meeting of the Pacific Coast District of the American Petroleum Institute, Division of Production, held in Los Angeles, April 13, officers for the ensuing year were elected.

L. L. Aubert, general manager of Bankline Oil Company, Los Angeles, was re-elected chairman. Aubert has been in the oil business since 1922, and has engaged in drilling, producing and refining work.

Howard C. Pyle, production research engineer for Union Oil Company of California, with headquarters in Los Angeles, was made vice chairman for the Los Angeles Basin district.

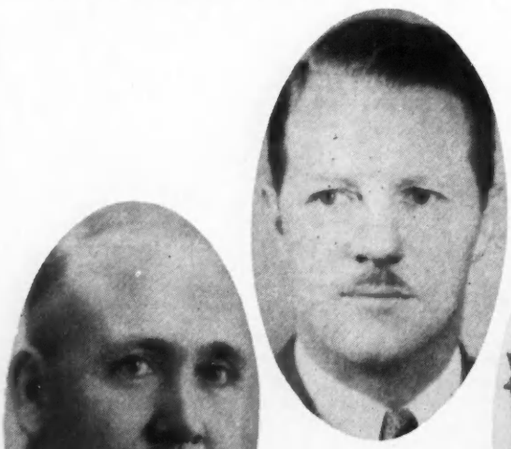
W. L. Bagby of Shell Oil Company was elected vice chairman in charge of the Coastal district. He is located at Ventura, California.

J. H. Sargent of Kettleman North Dome Association, Avenal, California, was another vice chairman elected. He is in charge of the San Joaquin Valley district.

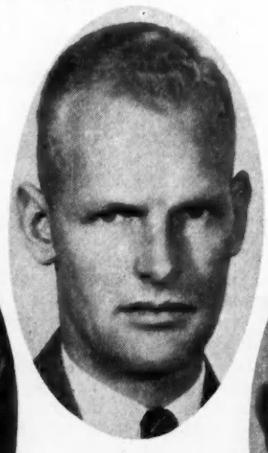
W. G. Corey, Pacific Gear & Tool Works, Los Angeles, was elected treasurer.

D. S. Kilgour was made secretary. Kilgour is with California Oil & Gas Association, Los Angeles.

The following men were elected members of the advisory committee: W. L. McLaine (chairman), General Petroleum Corporation, Los Angeles; L. L. Aubert (ex-officio member), Bankline Oil Company, Los Angeles; Bruce Barkis, Richfield Oil Corporation, Los Angeles; A. H. Bell, Continental Oil Company, Los Angeles; Elmer Bolton, Ohio Oil Company, Los Angeles; H. S. Cole, Jr., The Texas Company, Los Angeles; L. A. Cranson, Honolulu Oil Corporation, Ltd., San Francisco; W. H. Geis, Super Asphalt Company, Los Angeles; Dana Hogan, Hogan Petroleum Company, Los Angeles; Joseph Jensen, Associated Oil Company, Los Angeles; W. N. Lacey, California Institute of Technology, Pasadena; L. B. Little, Standard Oil Company, Los Angeles; H. M. Macomber, Pacific Western Oil Company, Los Angeles; H. F. Owen, Ethel D. Co., Maricopa; R. L. Patterson, U. S. G. S., Taft; F. E. Rehm, Shell Oil Company, Los Angeles; Wm. Reinhardt, Union Pacific Railway, Los Angeles; A. C. Rubel, Union Oil Company, Los Angeles; R. E. Stearns, Universal Consolidated Oil Company, Los Angeles; Lester Uren, University of California, Berkeley; A. E. Wallace, Western Gulf Oil Company, Los Angeles; W. C. Whaley, Barnsdall Oil Company, Los Angeles.



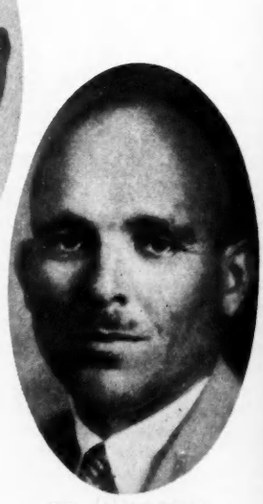
L. L. AUBERT
Chairman



H. C. PYLE
Vice Chairman

D. S. KILGOUR
Secretary

W. L. McLAINE
Advisory Chairman



W. G. COREY
Treasurer

spoil the most careful work of the drilling foreman or the engineer.

The paper emphasized the need for use of proper surface equipment, and added that determination of condition of the hole is important. The latter involves the separate determination of (1) top of the oil sand (static fluid level), (2) top of the salt water, (3) cleaning out the sand (if any), as far as possible, (4) running wall scraper or impression blocks to see if the casing is bad or collapsed, and (5) running acid bottles or other inclination instruments to determine if the hole is straight.

★ Plant method efficient in pipe reconditioning

In the oil industry pipe is the very life blood of operations, according to a paper by K. C. Hayes on "Plant Pipe Reclamation." The paper covered the subject of reclamation of pipe and other oil field tubular products, as carried in regularly established plants, but differentiated from the somewhat better known practice of reconditioning pipe lines in place. The object of each method of reclamation is the same—to restore the usefulness of the material and to prolong its life. This paper is published in full in this issue.

★ Wire line coring has advanced materially

"Use of Wire Line Core Barrel in California," a paper presented by W. A. Clark, The Texas Company, traced the history of wire line coring from its first use in 1926 to the present time. Although this type of core barrel was used 11 years ago, it did not come into general use even in the Mid-Continent fields until 1928. Development of "full-hole" drill pipe quickly broadened its application. As early as 1926 a wire line core barrel was developed and used in California, the first design having been developed for use in constricted drill pipe. The first core barrel of this type cut a core only one inch in diameter, and it was impractical.

First Used in 1934

Some of the first wells in California in which the conventional barrel and bit combination was run were Long Beach and Mountain View in 1934, the paper stated. At Long Beach the results were unimpressive, and the heads were dulled after making only 30 to 40 feet. At the time it was thought uneconomical to run this type core barrel above 3500 feet, even though the wire line cutting could dig as fast as the drilling bit. There was the need of supplying suitable drill pipe and the rigging of a sand reel or hoist, and a decided need for further education for the driller in the use of the bit.

Thus in 1934 lack of standardization of wire line hoisting equipment, and a dearth of full-hole or suitable drill pipe with which to run the tool. With thousands of feet of serviceable drill pipe on hand and the poor showings of first tests, a slow adoption of wire line coring was indicated. Yet by the end of 1935, it had become in common use. A California company had begun development of a competitive tool, and by the end of 1936 a total of over 130,000 feet of hole had been cored by the two companies.

The use of wire line coring is especially applicable and economical in wildcat drilling, where a program of alternate coring and drilling may be applied.

The paper cited drilling records that showed to advantage for wire line coring, but it was not meant to convey the thought that the conventional type of coring does not have its place.

★ Power requirements are raised with bit weight

While considerable data have been gathered from time to time on electric powered rigs, apparently no attempt has been made to segregate the table drive from the hoisting duty except in the most general manner, according to a paper read by C. F. Forsberg on "Rotary Table Drive." With this thought in mind, it seemed that interesting facts might be obtained by running some tests on drilling rigs and finding what the power requirements were to operate the table with various weights on the bit. The tests showed definitely that as the weight on the bit is increased in soft formations and the drill is speeded up, the power requirements increase rapidly.

Tests Made on Four Wells

Tests were made on four wells located in the Buena Vista field, the author stated. In three of these wells a conventional drive was used in which the motor used to drive the table was rate 8 pole, 150 horsepower, 900 RPM, this being a form wound rotor motor with resistor laid out for about 50 percent speed reduction on drilling points, with some additional resistance for idling speeds. In this conventional drive the motor is direct connected to the reduction gear, which in turn drives a countershaft. From this countershaft the table is driven by means of an ordinary chain and sprockets, and in addition means are provided for using this motor for hoisting by ordinary hook-up through line and drum shafts. The highest obtainable table speed for table operation with this arrangmeent is 184 revolutions per minute, this speed being possible when the motor is operating with its rotor short circuited. Due to the double sprocket arrangement it also is possible to obtain a speed of 105 revolutions per minute on the table with the motor operating at maximum speed.

One-Inch Lines Used

In all tests six 1-inch lines were strung through the blocks and 5-inch drill pipe was used. The wells in this district are completed in hard sand, soft shales and conglomerates, and in drilling the change from one formation to another occurs frequently and rapidly. Readings were obtained by means of curve drawing wattmeters with necessary instrument transformers. Check readings also were noted of amperes and volts, but all power data were taken by means of the wattmeters. All speeds were taken by tachometer and the weights on the bits were recorded by a popular form of weight indicator.

Speeds Up to 500

The paper pointed out that one operator is considering the use of table speeds of about 500 revolutions per minute, and in the immediate future a speed of this kind may be attempted. The author stated that if data had been secured on several holes of larger diameter, with speeds such as used in the described tests, something definite could have been worked out on the units necessary to power the tables for various conditions of drilling.

★ Size casing influences production practices

Ernest K. Parks, Standard Oil Company of California, discussed "Selection of Size of Oil Strings for Wells in California," reaching the conclusion that economics of well design involve consideration of production practice, investigation of effect of hole size is warranted, perforations deserve continued study, and advantages of additional oil string size may possibly be evaluated early in the development state.

Parks stated that costs of larger oil strings are easily estimated, but economic justification involves detailed appraisal of functions which vary with size. Well preservation is fundamental. Pipe must resist bending, and larger and heavier casing gives greater strength per pound of steel. He discussed perforations and he suggested that the vertical slot reduces the section modulus the least.

Small Casing Limits Pumps

Parks showed the limiting effect of small casing upon suitable pump diameters, and factors which facilitate well cleaning in larger sized casings. He said that a very slight bend requires a large clearance for free passage of bailers or other internal pipe sections. The size of hole as related to production was discussed with reference to the familiar kinetic pressure gradient and other considerations which indicate a great restriction of flow near the well bore.

★ Field control of rotary drilling mud

The proper field control of rotary drilling mud was the subject of P. H. Jones of Union Oil Company of California. He described practices and methods in use, and suggested changes that would benefit operators.

C. I. O. Versus Company Union, et al

IF the C.I.O. continues its efforts for unionization of the oil industry, the lines of battle will be more and more closely drawn with C.I.O. organizers, most of whom are new to the oil industry, on one side and groups of company employees and the A. F. of L. on the other side.

Thousands of oil company employees are asking themselves the question:

"What will the C.I.O. give me that I cannot have in an organization of my own fellow company employees? What can they give me that I would not have otherwise?"

A. F. of L. union members are asking themselves the question:

"What will happen to the ground gained through various A. F. of L. craft unions if the C.I.O. is successful in supplanting our unions with a mass union in which our immediate problems will be forgotten?"

And overshadowing all of it is the reputation of the C.I.O. movement for strife and disregard of law.

Public opinion is a powerful thing. Both the A. F. of L. and oil company employees recognize this. And now, after a few months of intensive activity on the part of the C.I.O., the C.I.O. movement has been so closely identified with disregard of law that it is in very bad public odor.

To the complaint of the paid organizers that a company union is definitely under the thumb of the company, we would answer that this is not true, cannot be true under the Wagner law, and even if it were true, which we repeat it is not, oil company employees are receiving and unquestionably will continue to receive fair treatment at the hands of their companies.

The new idea in the so-called company union or association of company employees is predicated on no company participation in its deliberations. The employees themselves in such associations as we have studied elect their own representatives without the companies or the officials of the companies, even down to the foreman, participating. If they have grievances these grievances may be presented to representatives appointed by the company. Certainly, here is a method well calculated to promote harmony. No company appreciates being put in the position of having a paid agitator whose interest may be open to suspicion, to say the least, control negotiations for the company's employees.

On the other hand, in the case of an association of company employees, theoretically at least and practically in general, they are interested in the welfare of the company for which they are working. They are interested also in their own welfare. These two welfares are not in controversy but have much in common. If some things arise which the employees as a whole feel are not fair then they may be presented to the company's spokesman and the difficulties ironed out in a friendly manner. If the C.I.O. is successful we unquestionably will see men of the type of Lewis (at this point we ought to publish his picture) not simply representing the employees in any grievances they may have, but dictating the grievances.

The rather conclusive votes of the employees of several companies recently would indicate that oil country workers are not being misled by the emissaries of strife who have picked on the oil industry as a new battle field.

Protection

ISN'T it typical of the opinion which oil field workers hold of the C.I.O. that one of the questions most frequently asked of company officials by company employees is:

"If we refuse to join the C.I.O. will you afford us protection? Will you protect our property and our lives? Will you protect our jobs?"

Surely no more potent indictment of the C.I.O. could be imagined than these questions.

The answers which we have heard are:

"Yes, we will protect your lives and your property. Yes, your jobs will be protected. We have no intention of surrendering the jobs of our employees to the dictates of the C.I.O. We have no intention of permitting trouble makers to endanger the persons of the men working for us."

In at least one state, Texas, which according to the C.I.O. organization has the greatest number of possible oil field members, the governor has made an emphatic declaration regarding some of the tactics with which the C.I.O. has been identified.

As we see the situation, men working in the oil fields are the recipients, or threatened recipients, of an invasion of unasked guests, whose visits in other places have been the occasion of strife and trouble.

They are not wanted and from reports from various points, they are finding it out.

COMMENT

Position of Middleman

As prices of various commodities used in industry advance there are always some who begin to cry for the elimination of the middle man. Some unthinking people in Washington seem to have devoted themselves to a crusade against the middle man, forgetting that the middle man earned his place through service. In this connection an editorial in a recent issue of the Bridgeport Bulletin seems to state the case rather clearly.

It is reproduced as follows:

"In the complicated business of producing oil there are three interests which must have consideration for the economic development of the industry: (1) the manufacturer of exploration and production equipment; (2) the distributor of this equipment; and (3) the operator or user of the equipment. Each performs a definite service for the other and each is entitled to a fair and equitable reward for services rendered. To place any one of the three at a disadvantage, injures the other two and increases costs.

"It is obvious that the user of the equipment cannot save for himself the manufacturer's profit by making his own equipment and doing away with the manufacturer. It is also obvious that a manufacturer cannot economically and efficiently manufacture all of the many items of equipment used in producing oil. So we find oil field equipment manufacturing divided into separate groups, one making pipe, another rods, another drilling muds, another machinery, and so on, each more or less specializing to increase production, lower costs and produce better products. Competition forces the savings and advantages on to the user of the product.

"But why not eliminate the middle interest—the distributor? Is he on industry's relief roll, taking from both the manufacturer and the user? Analyze his position from both the manufacturer's and the user's standpoint. Suppose the distributor were eliminated entirely, would this mean that the distributor's profit would be gained or saved by either the manufacturer or the user, or divided between the two of them? Common sense and experience says emphatically. 'NO.'

"The elimination of the distributor would bring increased costs for the oil operator. For the user of oil field equipment to obtain the same services he now receives each manufacturer would have to set up a distributing organization, with field stores, warehouses, material yards, sales and service organizations, credit facilities, executive offices and what not. Each manufacturer would necessarily pass on to the operator or user of his equipment the full burden of the overhead, selling and distribution costs. The manufacturer's profit would be no greater—competition and greater costs would likely make it less—and the operator's costs would certainly be enormously greater. The user would be faced with a pipe store, a mud store, a sucker rod store, a wire store, a fittings store and dozens of others and a flock of salesmen from each, together with the costs of maintaining all of them.

"The distributor's place in the economic scheme is to reduce costs and increase efficiency for both the manufacturer and the user of the product. Consider the Bridgeport's position as a manufacturer and distributor. We manufacture the equipment that our facilities and experience enable us to produce economically. To reduce our distribution costs on these items and to be of greater usefulness to our customers, we distribute many products of other manufacturers. By spreading our selling, warehousing, administrative, servicing and credit costs over the products of many manufacturers, we like other distributors of a diversified line of equipment, perform an exceedingly useful and economical service for both the manufacturer and the user of oil field equipment. Our profit as a distributor, which is our remuneration for a useful service, is much less than the savings we bring to both manufacturer and user.

"There should be no antagonism between the manufacturer, the distributor and the user, for the welfare of each is the concern of the others. The user should buy his equipment as cheaply as possible, consistent with a return for the manufacturer and for the distributor, that will permit a fair return on capital, as well as permitting a part to be placed back into business for making and distributing better products at less cost, the benefits of which revert to the user in greater proportion than to either the manufacturer or the distributor."

Rising Costs

During the past few weeks we have received numerous reports of increasing costs of oil country equipment. Most oil producers, as well as equipment people, have anticipated these increased costs because it was quite obvious that they were coming.

Steel has gone up materially and despite the pronouncement of President Roosevelt on the subject, it is entirely possible, if not probable, that there will be still further advances in steel. Increased labor cost and toll to the government under one guise or another have materially increased the cost of producing practically every item used by the industry. Not only has the price of steel advanced but rates of pay to all types of workmen engaged in producing finished products have been raised during the past few months.

It would be our guess that the cost of drilling this year will be up somewhere between 10 and 15 percent per foot.

The price of oil has had one increase since the first of the year and with increasing costs as well as increasing demands it is extremely likely that we will see additional advances in crude oil prices.

SELECTION OF

Size of Oil Strings

FOR WELLS IN CALIFORNIA

By ERNEST K. PARKS,
Standard Oil Company of California,
Los Angeles, California

ALTHOUGH costs of larger oil strings are estimated easily, economic justification involves detailed appraisal of functions which vary with size. Since well preservation is fundamental, pipe must resist bending, and larger and heavier casing gives greater strength per pound of steel. The influence of perforations upon production and steel are discussed, and it is shown that the vertical slot reduces the section modulus the least.

Small casings have a limiting effect upon suitable pump diameters, and larger sized casings facilitate well cleaning. A simple formulae is developed to illustrate that a very slight bend requires a large clearance for free passage of bailers or other internal pipe sections.

The size of hole as related to production rate with reference to the kinetic pressure gradient and other considerations, which indicate a great restriction of flow near the well bore.

This article was presented before the spring meeting of the Pacific Coast District of the American Petroleum Institute, Division of Production, Los Angeles, April 13.

IN the systematic development of proved oil lands there often is enough latitude in the possible casing program to allow the operator a reasonable choice of oil string size.[2] There must be some basis for a decision. Obviously one cannot prescribe that this should be a minimum. On the other hand, a maximum might be equally absurd. How then are we to choose a size which will shall be an economic selection?

The first consideration of proposed casing programs are the costs, which will not be discussed because they are best determined in each case by those who are responsible for drilling. We know that the larger the oil string the more the cost. It then follows that to determine and appraise the advantages of larger sizes is the most pressing problem. The solution involves a definition of the functions of the oil string, a review of their operating features during the productive life of the well, and a special study of those functions which vary with size. It is realized that the peculiarities are innumerable and that important factors are difficult to evaluate. Nevertheless, an attempt is made to present the problem within the limits of our experience.

Functions of the Oil String

Although hundreds of wells in other oil producing regions are completed with open hole throughout the productive horizon, we use oil strings because we cannot get along without them. To preserve the well is the primary object. The oil string must be strong enough to withstand the variously applied forces of caving formations. It should act as a screen to restrain solids from entering the well. It should be of material which resists the corrosion of oil field waters, and the erosion caused by the flow of fluids. It must also endure internal hazards such as tubing wear, fishing, and operations necessary in alterations or repairs. The oil string may do all this and yet fail in one important respect, that is, it may not allow fluids to enter the well. But before proceeding with a discussion of performance it will be in order to consider some factors of oil string design.

Figure 1 illustrates some different conditions of stress on the portion of the oil string which penetrates the productive formation. Although in each case the diameter and wall thickness of the oil string becomes relatively unimportant over great lengths, the probability of failure is decreased by using heavy pipe of large diameter and of the best quality metal.

Other hazards are related to time. These include corrosion, which may be general or concentrated at certain places; and erosion of metal due to flow through perforations, wear of tubing or running of tools; and sudden strains arising from accidents which may occur during producing operations, and repair of the well.

Of course the perforations may themselves be a hazard. Various styles are shown in Figure 2. They illustrate the manner in which slot design affects the bending strength of the casing. Particular attention

[2]In this paper the oil string whether a complete string or a liner is defined as the casing which penetrates the formation to be drained. Commercial practice is used for specifying dimensions of perforations and except where noted these are presumed to have been made in the shop.

TABLE 1

Section Moduli for 7-in., 30-lb. Pipe of 0.423 in. Wall Thickness, for Various Styles of Perforations Having Equal Areas Per Foot of Pipe.

STYLE*	SPECIFICATIONS	Section Modulus
Vertical Slots	0.100 in. × 2½ in. on 6 in. centers, 14 rows	13.15
Round Holes	0.565 in. diam. on 6 in. centers, 14 rows	11.13
Horizontal Slots	0.100 in. × 2½ in. on 6 in. centers, 14 rows	2.77
Plain—No Holes		13.56

* See Figure 2 for plan of slots.

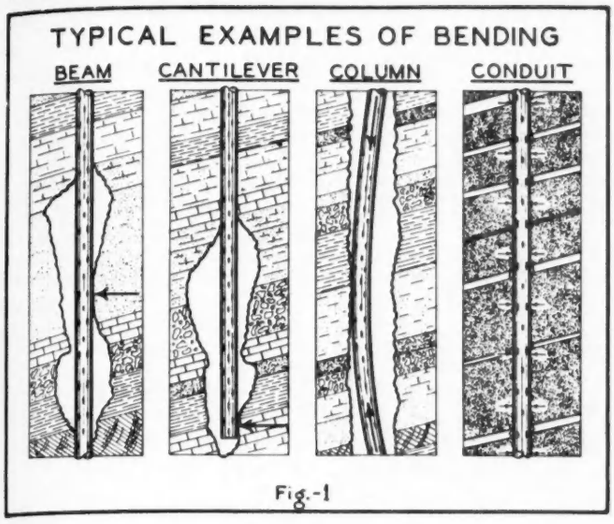


Fig.-1

is directed to the section modulus of the various cuts, as shown in Table 1.

Inasmuch as the section modulus is a direct index of pipe strength we may tabulate the results of Table 1 on a percentage basis, Table 2.

TABLE 2

Effect of Perforation Style on Pipe Strength
Data from Table 1

STYLE	Percentage of Original Strength	Percentage Reduction of Strength
Plain	100	0
Vertical Slots	97	3
Round Holes	82	18
Horizontal Slots	20	80

It is conclusive that the vertical slot results in the lease reduction of strength[3] because of alteration of the section modulus. Furthermore, the actual strength of a given casing is not only affected by the style of slot, but also by the cutting process, which alters the physical properties of the steel.[4] The operator should, therefore, be certain that the method is not detrimental.

There are various degrees of necessity for the perforations to function as a sand screen. Formations vary from hard, well cemented, almost continuous sandstone, to the opposite case of soft, loose, alternating sands and caving shales. Under the first condition an oil string may not be required and, indeed, wells with uncased holes have been successfully operated. Needless to say in such cases the design of the perforation is of little importance with respect to screening. As the other extreme is approached care is necessary, not only to insure against sanding

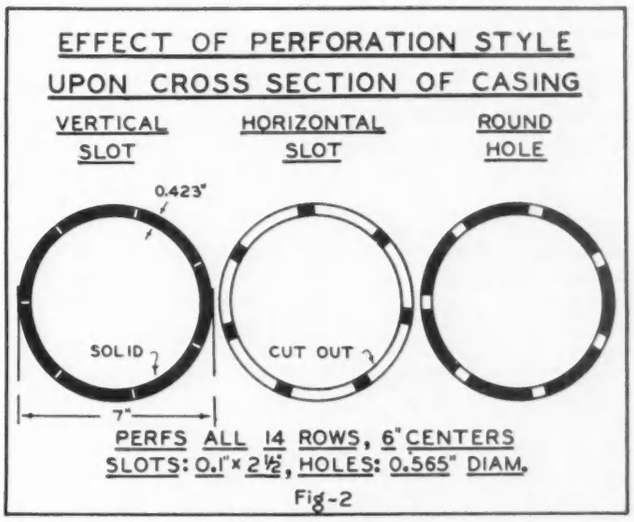


Fig-2

up but also to preserve the well bore by preventing caving around the oil string as a result of removing too much material. Large caves do permit large rates of flow under ideal conditions, but the deliberate formation of such caves is a hazard. The best engineering, under present practice, is to drill the maximum sized hole justified by the circumstances and then protect that hole with suitable casing, properly perforated.

Selection of perforations for efficient screening is a detail that has received much thought but comparatively little investigation. Of course the specifications for certain zones may have been chosen by actual trial, which is in any case the final test, but laboratory work promises to be of much assistance.

The assortment of material which falls against the slot is of so many possible grades that ultimately the

[3]This is not true as to resistance to compression.

[4]Frederick G. Tickell and Welton J. Crook, The Heat Treatment of Oil Well Casing, Oil Field Engineering, Nov. 1927.

TABLE 3

Area of Opening in Square Inches Per Foot With Centers 2½ Times Slot Length

Width of Slot	NUMBER OF ROWS OF SLOTS											
	4	6	8	10	12	14	16	18	20	24	28	32
.030"	.58	.86	1.15	1.44	1.73	2.02	2.30	2.59	2.88	3.46	4.03	4.61
.040"	.77	1.15	1.54	1.92	2.30	2.69	3.07	3.46	3.84	4.61	5.38	6.14
.050"	.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4.80	5.76	6.72	7.68
.060"	1.15	1.73	2.30	2.88	3.46	4.03	4.61	5.18	5.76	6.91	8.06	9.22
.070"	1.34	2.02	2.69	3.36	4.03	4.70	5.38	6.05	6.72	8.06	9.41	10.75
.080"	1.54	2.30	3.07	3.84	4.61	5.38	6.14	6.91	7 68	9.22	10.75	12.29
.090"	1.73	2.59	3.46	4.32	5.18	6.05	6.91	7.78	8.64	10.37	12.10	13.83
.100"	1.92	2.88	3.84	4.80	5.76	6.72	7.68	8.64	9.60	11.52	13.44	15.36
.110"	2.11	3.17	4.23	5.28	6.34	7.39	8.45	9.51	10.56	12.68	14.79	16.90
.120"	2.30	3.46	4.61	5.76	6.91	8.06	9.22	10.37	11.52	13.83	16.13	18.44
.140"	2.69	4.03	5.38	6.72	8.06	9.41	10.75	12.10	13.44	16.14	18.82	21.50
.160"	3.07	4.61	6.14	7.68	9.22	10.75	12.29	13.83	15.36	18.44	21.50	24.59
.180"	3.46	5.18	6.92	8.64	10.37	12.10	13.83	15.55	17.28	20.74	24.20	27.66
.200"	3.84	5.76	7.68	9.60	11.52	13.45	15.36	17.28	19.20	23.05	26.90	30.71
.250"	4.80	7.20	9.60	12.00	14.40	16.80	19.20	21.60	24.00	28.80	33.60	38.40

TABLE 4[8]

Total Footage of Selected Sizes of Surface and Water Strings Used in California in 1936.

SIZE	Footage	Approximate Percent of Total
11¾"	200,000	5
10¾"	199,000	5
9⅝"	566,000	15
9"	163,000	4
8⅝"	1,714,000	45
7"	361,000	10
6⅝"	608,000	16
Total of listed Sizes	3,811,000	100

TABLE 5[9]

Total Footage of Perforated Pipe Used in California in 1936.

SIZE	Footage	Approximate Percent of Total
8⅝"	23,000	11
7"	8,000	4
6⅝"	100,000	48
5¾"	30,000	15
5½"	1,000	..
5"	18,000	9
4¾"	27,000	13
Total of listed Sizes	207,000	100

best solution may be to adopt some average design for the certain zone and locality. This, however, assumes that all slots must be the same in one particular well. Some thought might be given to the practicability of altering the perforations of a liner in accordance with the character of the formation, just as blank pipe is run opposite extensive unproductive shale bodies.

Another factor in selecting perforations is the rate of production. Obviously the sand bridged slot does not have an orifice coefficient which is equivalent to that of a free passage, and therefore it is improper to conceive of the area of the slot as being a measure of its capacity to accommodate flow. Kobe, Inc.,[5] describe experiments from which they conclude "The production is held back largely by the pressure drop through the sand and that increasing the slot area beyond a certain value does not result in any material increase in flow." This may be true under ideal sand bridging conditions at the slot and around the pipe, but we must realize that actual practice cannot guarantee such conditions, and therefore the object may be to increase the probability of the number of effective perforations per foot of pipe, not to enlarge the area.

Table 3[6] lists the area per foot of various perforation designs. These designs result in a perforated area which averages about two percent of that of the outside surface of the pipe. Of course this percentage is still smaller when referred to the sand face. No wonder, then, that the perforated oil string is at best a poor substitute for open hole, nor is it surprising that the effect of hole diameter has been obscured.

Realizing the advantages of a larger well bore, water supply experts recommend the practice of setting perforated screens in a large cavity which has been filled with selected gravel. Uren[7] has discussed a similar procedure for oil wells. The principle is sound but application to oilfield development awaits further practical demonstration. In the meantime one function of the oil well perforated pipe is to cause a permeable sheath between the slots and the sand face.

California practice involves so many conditions that a detailed discussion is impossible here. We find the trend, however, in reports of totals of various casings used.

The large proportion of 8⅝-inch water string would indicate that we might expect a major choice of 6⅝-inch for the oil string. This is the case as shown in Table 5.

This summary indicates that only 15 percent of perforated oil string footage was greater than 6⅝-inch, whereas 37 percent was smaller.

Special Study of Size

In preserving the well an important detail is to prevent bending the pipe beyond its elastic limit. Strength is directly proportional to the section modulus of the pipe cross section taken at right angles to the longitudinal axis. This function increases with diameter and thickness as shown in Table 6.

The section modulus has been expressed as a ratio to the weight of pipe in order to show that as larger and heavier sizes are used, there results an increase in strength per pound of material. These ratios are compared in the last column in terms of the value of 6⅝-inch casing as a base. This illustrates the fact that when one buys larger pipe at a price which is proportional to tonnage of steel, he is not only obtaining more strength but greater strength per dollar.

Larger pipe also allows more perforations per foot. These will vary in direct proportion to the diameter of the casing. Using a scheme of 1½-inch slots, with a spacing of 2½ times slot length the number of perforations per foot varies from 12.8 for 4 rows to 102.4 for 32 rows. With vertical slots of

[5]Kobe, Inc., The Selection, Properties, and Manufacture of Perforated Casing, Private Publication, 1936.
[6]Courtesy of Kobe, Inc.
[7]L. C. Uren, Increasing Production of Petroleum by Increasing Diameter of Wells. Am. Inst. Min. & Met. Engrs., Trans. Vol. LXXI, 1924-25.
[8]Adapted from report by Olson Scouting Service, Los Angeles.
[9]Olson, Reference quoted.

TABLE 6

Section Moduli for Various Sizes of Casing and Relation to Unit Weight.

SIZE, O. D.	Weight (W) Lbs./Ft. Includes Threads and Couplings	Thickness of Pipe, Inches	Section Modulus (I)	Ratio of I/W	Percent of 6⅝" Value of I/W
4¾"	16	0.334	4.783	0.299	70.4
5½"	20	0.361	7.032	0.352	82.8
6⅝"	28	0.417	11.88	0.425	100.0
7"	30	0.423	13.56	0.452	106.0
8⅝"	36	0.400	20.32	0.564	133.0
9"	40	0.425	23.44	0.586	138.0

TABLE 7

OIL STRING SIZE			Safe Inserted Joint Tubing O.D.	Tubing Size (U.E.)	TUBING TYPE			ROD TYPE			
								Cup or Composite		Machined Working Bbl.	
O.D.	Lbs./Ft.	I.D.			Pump O.D.	Plunger O.D.	*Pump Constant	Plunger O.D.	*Pump Constants	Plunger O.D.	*Pump Constant
8⅝".....	38	7.775"	5½"	4"	5"	3¾"	1.6061	3½"	1.425	3.250" 3.000"	1.2300 1.0488
7⅝".....	33	6.765"	4¾"	3"	4"	2¾"	0.8808	2½"	0.7279	2.250" 2.000"	0.5895 0.4659
7".....	28	6.214"	4¾"	3"	4"	2¾"	0.8808	2½"	0.7279	2.250" 2.000"	0.5895 0.4695
6⅝".....	28	5.791"	3½"	2½"	3½"	2¼"	0.5895	2"	0.4659	1.750" 1.500"	0.3566 0.2622
5½".....	20	4.778"	2⅞"	2"†	2⅞"	1¾"	0.3566	1½"	0.2622	1.250" 1.000"	0.1821 0.1165
4¾".....	16	4.082"	2⅜"	1½"†	2⅜"	1½"	0.2622	1¼"	0.1821	1.000" 0.750"	0.1165 0.0655

* Pump constant denotes barrels per day per inch of stroke at one stroke per minute.
† Plain tubing.

medium width, such as 0.80-inch, the perforating can be done in a manner which will permit 4 rows per integral inch of diameter of pipe with an almost negligible reduction of bending strength.

The size of the oil string will not be of much concern during the flowing stage of production, but becomes more important in gas lifting, because the fluid level has dropped and the required submergence may necessitate lowering the tubing into the perforated section. At this stage there may be no objection to small tubing which is of a safe size for use in the liner. But difficulties arise. The depleted reservoir pressure may require a special device to obtain flow or to prevent injection of input gas. Although one might prefer to cease gas lifting at this stage, the depth of the well and its rate of production may be such as to prohibit pumping by any practicable means. Unless there is room to install the various appliances of special gas lift, the operator is faced with inefficiency, high costs, and early abandonment. Such wells result in production losses, or require expenditures which are directly chargeable against the so-called savings which have been made by reducing the oil string size. Obviously, the deeper the well, the more intense are the obstacles and the greater is the investment which is jeopardized.

In the pumping stage the size of oil string becomes still more important. Table 7 shows suitable pump sizes for oil strings of various diameters.

The ratio of areas as tabulated apply not only to single or double acting piston pumps, but also to such other means as may be employed. Note that as soon as 3½-inch O.D. tubing must be used the pump constant drops 33 percent from that of the pump which can be used with 4¾-inch O.D. tubing. Of course the large pump results in excessive rod loads, and hence the diameter of the rod pump is limited. The rod load, however, does not apply to hydraulic pumping as described by Coberley[10], nor does it apply to centrifugal pumping. These methods contend with unit pressures, not with total loads, therefore these pumps extend the limits of pumping capacity both as to depth and as to rate. In every case, however, the possible rate is limited by the size of the oil string.

When necessary to overcome the handicap of small working areas, the production men have resorted to the long stroke (from 6 to 10 feet) in rod pumping. The surface units for such a stroke involve extra first cost, which partly dissipates the savings made by using small casing. It is true that the long stroke has merit, but much of its advantage lies in overcoming difficulties which would not be present if larger casings had been possible.

The pumping situation should be carefully analyzed and considered before the estimated saving by use of smaller oil strings is accepted as justifiable. The analysis may be made by checking a completed well for productivity index, and pump efficiency. It should be remembered that sucker rods are not the sole medium for well pumping. Attempt to anticipate the probable water difficulties. Consider the gas separation problems, and estimate the difference between the cost of pumping in the various proposed sizes. If the small oil string size meets producing requirements it may logically be proposed in the drilling program.

Any time after completion the well may have to be cleaned out. The amount and frequency of cleaning work depends upon various factors already discussed. One factor is the size of oil string as indicated by the comparison in Table 8.

TABLE 8

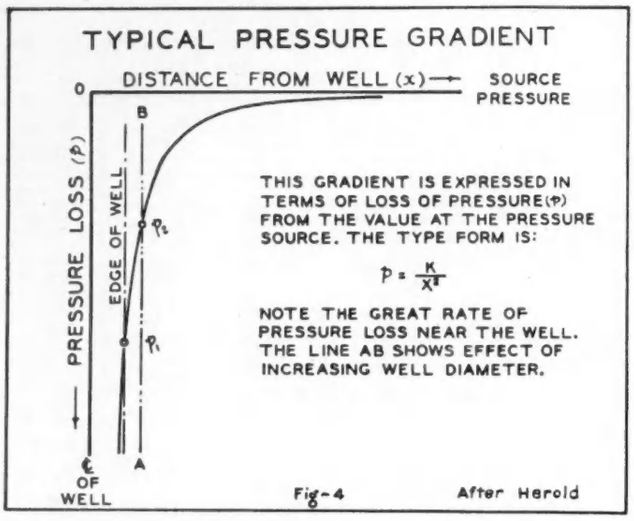
Factors of Interest in Well Cleaning.

Size of Oil String	5½" 20 lb.	7" 30 lb.
Size of Drilled Hole	7⅞"	9"
Area of Annulus, Sq. In	20	25
Cubic Inch per Foot of Annulus	240	300
Rows of Perforations	10	14
Slots, Size and Spacing	0.1 x 2½" x 6"	0.1 x 2½" x 6"
Holes per Foot	20	28
Perforation Area, Sq. In./Ft	5	7
Safe Bailer Size, Nominal I.D.	2½"	4"
Capacity; Cu. In./Ft. of Oil String	215	355
Capacity; Cu. In./Ft. of Bailer	59	150

Examination shows that although there may be 25 percent more material to be removed from the annulus of the 7-inch casing, that size has 65 percent more space per foot in which to accommodate debris which falls into the well. In addition the greater volume of material may be removed more rapidly from the larger casing because of greater bailer capacity.

Bends in the oil string restrict the size of bailer, depending upon the clearance and the degree of bending. In Figure 3 a smooth circular bend is illustrated, showing an inside rigid section in a position

[10]C. J. Coberley. Hydraulic Pumping Applied to Oil Well Pumping A.P.I. Drilling and Production Practice, 1935.


TYPICAL PRESSURE GRADIENT
DISTANCE FROM WELL (x)
SOURCE PRESSURE
PRESSURE LOSS (p)
EDGE OF WELL
B
A
THIS GRADIENT IS EXPRESSED IN TERMS OF LOSS OF PRESSURE (p) FROM THE VALUE AT THE PRESSURE SOURCE. THE TYPE FORM IS:
$p = \frac{K}{x^2}$
NOTE THE GREAT RATE OF PRESSURE LOSS NEAR THE WELL. THE LINE AB SHOWS EFFECT OF INCREASING WELL DIAMETER.
℄ OF WELL
Fig-4 After Herold

of its maximum length for the existing clearance. The dimensions of Figuure 3 are:

l = length of section, feet
od = o.d. of section, inches
id = i.d. of casing, inches
r = radius of curvature of bending, feet
Angles are in degrees.

Then by simple trigonometry: The total clearance between section and casing is:

$$cx = id - od$$ and

(1) $$\text{Tan } A = cx/61$$

$$LC = 2A$$ also and

(2) $$r = \frac{l}{2 \text{ Sin}(2A)}$$

Two sets of solutions are shown in the figure. One shows the required radius of curvature for various clearances of a 40 foot section, and the other shows limit lengths for passage of a 500-foot bend with the same clearances. Of course the solution must be modified if one is to permit deflection of the inside section. The solutions show, however, the limiting effect of small clearance.

The size of hole drilled through the productive formation is a function of the rate of fluid entry into the well. Since 1856, when Darcy published his famous equation of water flow through porous sands, there has been accumulated volumes of classified data and well developed theory on hydrology. Consequently it has long been an established fact that large bore water wells yield large rates. Furthermore petroleum investigators were encouraged to attack their problems. During the last ten years and particularly of late there has been much progress. The A.P.I. has lent encouragement by sponsoring research projects and has now formed a well spacing committee to foster that difficult subject, so closely related to the size of the well bore.

There is not much question as to the general type of kinetic pressure gradient which surrounds the well bore. Herold[11] demonstrates that for his specified ideal system of radial flow the gradient is a quadratic hyperbole as shown in Figure 4. When the flow characteristics are modified by mixed fluids of oil, gas and water there is an effect on the gradient. This condition is discussed by Muskat and Meres[12] who show that there is a great decrease in saturation and permeability about the well center resulting "in an appreciable increase in the concentration of pressure gradients about the well center." This idea of change of permeability is also discussed by Hassler [13] who defines "relative permeability" as the ratio between wet oil and dry permeability.

Practical difficulties may always render difficut or even prevent us from determining the exact flow

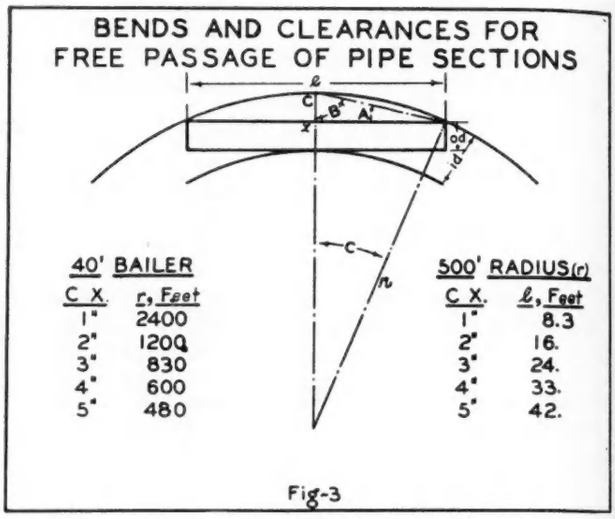


Fig-3

formulae that apply to our reservoirs and wells. Nevertheless we have a constantly increasing background of mathematical analyses, laboratory experiments and field practice that is aiding us in obtaining a clearer understanding of complex relationships. A systematic attack on the well-spacing problem will probably include an analysis of the effect of hole size upon all functions of reservoir mechanics having a bearing upon the economic ultimate recovery of the reservoir fluids.

Evaluation of hole size with respect to first cost is not subject to precise treatment. This is only one of many economic problems of oil field development which must remain somewhat intangible. Notwithstanding the difficulties, it appears that a detailed review of the factors which have been presented would yield some significant values to place upon the advantages of larger oil strings. These values could then be used to determine whether the extra cost of the larger size were justified. Circumstances are so varied that it is almost useless to give examples of a general nature but a diligent analysis will be found worth the effort.

Conclusions

1. The economics of well design involve consideration of production practice.
2. Investigation of the effect of hole size on production rate appears to be warranted.
3. The perforated section of the oil string deserves continued study, especially with respect to selection of perforations.
4. There is a possibility of evaluating the advantages of additional oil string size for a particular development plan after prospect wells have revealed physical conditions and production performance.

[11] S. C. Herold, Analytical Principles of the Production of Oil, Gas, and Water from Wells, Stanford University Press, 1928. Ch. 12.
[12] Morris Muskat and Van W. Meres, The Flow of Heterogeneous Fluids Through Porous Media, Physics, September, 1936.
[13] Gerald L. Hassler, The Production of Oil by Gas Drive, Pa. State College Bulletin, Mineral Industries Experiment Station Bul. No. 20, 1936.

Chemical Clean-Out of Oil Wells in California

By M. W. MORRIS,
Standard Oil Company of California,
Taft, California.

CHEMICAL treatment to increase well productivity in California is a new art that has been successful in cleaning out material which obstructs the entrance of production by plugging perforations or the faces of sand. These substances are: (1), mud sheaths—formed during drilling or redrilling operations; (2), carbonate scale—deposited from well water; and (3), waxy-asphaltic residues—deposited by crude oil.

Approximately 500 wells were chemically treated in California during the past 12 months at an estimated total cost of $400,000. Despite a rather high percentage of failures, chemical clean-out work has proven profitable to the industry.

In many cases treatment failures were found to be the result of ill advised selection of wells or the misapplication of chemical. With more careful diagnosis of well conditions and increased knowledge of proper chemical application, the percentage of unsuccessful treatments should show a marked decrease.

Where applicable, chemical clean-out methods are more efficient than the older mechanical methods and it is believed that they will become an accepted feature of California production practice.

This paper was presented before the Spring Meeting of the Pacific Coast District, American Petroleum Institute Division of Production, at Los Angeles, April 13, 1937. The statements and opinions expressed therein are those of the author and should not be construed as an official action or opinion of the Institute, nor of this publication.

ACIDIZATION has been successfully employed for some years in the limestone and dolomitic formations of the Mid-Continent and Eastern fields. This type of rock material is soluble in acid and it has been found that drainage channels can be extended and reservoir permeability increased by forcing acid into the pores of the formation.

The silicious sands which comprise the main productive formations in California are not readily reactive with acids, and a chemical treatment has not been developed commercially which will increase the fundamental permeability of these productive sands. Chemical treatment to increase well productivity in California has been confined to date to the cleaning out of material which obstructs the entrance of production by plugging perforations or the faces of sand. Substances which have been effectively removed from oil wells with consequent increase in production are: (1) Mud sheaths—formed during drilling or redrilling operations; (2) carbonate scale—deposited from well water; and (3) waxy-asphaltic residues—deposited by the crude oil. The importance of this work is indicated by the fact that during the past 12 months approximately 500 wells were chemically treated in California at an estimated total cost of $400,000 for chemicals, labor, and miscellaneous materials.

General Consideration

It is axiomatic that, before well productivity can be increased by chemical treatment, there must be production obstructed from the hole by a substance or substances which can be effectively broken down by chemical action. To secure results it is essential that an accurate diagnosis be made as to the nature of the material responsible for the subnormal production, so that the proper chemical may be applied in treating the well. Detailed review of chemical clean-out work indicates that unsatisfactory results were obtained at a number of wells because either the chemicals were unsuited for the job or treatment of the well was not justified.

The time element is of great importance in chemical reactions and it is essential that the job be planned so that the chemical solution will be maintained for an adequate time in contact with the material to be removed. To prevent damage to the well's productivity, it is vital that the chemicals employed be such that they will not react to form organic sludges or inorganic precipitates with the hydrocarbons and waters existing in the well.

Removal of Mud Sheaths

Examination of cores and laboratory tests have demonstrated that the actual penetration of mud solids into sands is confined to a very small fraction of an inch.[1 2 3] It is now generally agreed that the penetration of productive sands by mud solids is so slight that this condition alone is seldom responsible for losses of production.

Repeated laboratory tests have shown that mud cake built up on the face of a sand can be readily dislodged by reversing the direction of pressure application. The pressure required in the laboratory to back the cake off a sand is only a small fraction (frequently less than 1 percent) of the differential pressure under which it was formed. Rubel and Wilde[1] suggest that the difficulty encountered in removing mud sheaths and exposing sand faces in oil wells is due to the support afforded by the perforated pipe. This explanation fits the known facts and indicates that disintegration of the mud sheath in wells is more difficult where: (1) the mud cake is thick as the result of use of mud with poor colloidal prop-

erties, and (2) well pipe is perforated with a limited number of rows or with slots of small mesh.

Flow from the higher pressure sands may be so violent as to completely disintegrate the mud sheath behind the pipe after the well is put on production. However, the natural forces in wells completed in lower pressure sands are often inadequate to effect a breakdown of the mud cake. It is probable that under these conditions the sheath may rupture opposite a portion of the perforations with the establishment of limited channels for the entry of production.

Mechanical agitation supplied by up and down swabbing of perforations and various types of pressure and vacuum washers has been helpful in breaking down and removing mud sheaths from behind well pipe.[1 4] Engineers have been working for some time on the development of chemical methods of removing mud sheaths, but it has been only in the past several years that the technique has been carried to the point where commercial success is attainable. It is of interest to note that of the 500 chemical clean-out treatments in California during the past year, approximately 450 were performed for the purpose of removing mud sheaths.

Several California service companies are equipped to treat wells chemically for mud cake removal. All of the companies but two have disclosed the composition and proportions of the chemical solutions employed in their processes. Table I shows the general nature of the chemical substances which are being used at this time to disintegrate mud sheaths.

TABLE 1

General Nature of Substances Employed in Chemical Clean-out of Mud Sheaths

Type of Reagent	Nature of Substances Employed
Acid.....	Strong Inorganic acids—with or without wetting agent. Semi-Neutral Electrolytes—with or without organic solvents.
Neutral.....	Aqueous Dispersion of Solvents—with wetting agent. Soda Ash and Caustic Plus Acid—with heat and carbon dioxide evolution.
Alkaline.....	Strong Caustic Compounds plus Water—With or without heat evolution.

The strong, highly ionized acids or alkalis will flocculate mud due to their effect on the pH value (hydrogen ion concentration). The acid solutions are generally more effective than the alkalis and an additional advantage is gained by their ability to attack acid soluble impurities, such as carbonates, which are present in many commercial muds. Unless the carbonate content is high, dilute solutions of acid are generally employed, since in the presence of small amounts of carbonate little acid is consumed. Where hydrochloric acid is used under these conditions, it has been found that between 4 and 5 percent acid concentration is satisfactory.

Soda ash and acid react with the generation of heat, carbon dioxide gas, and a sodium salt. Laboratory tests demonstrate that mud cake permeated by a solution of soda ash disintegrates rapidly when treated with acid. The evolution of carbon dioxide becomes less effective as a means of providing agitation under well conditions as bottom hole pressures approach 800 pounds. At approximately this pressure all of the carbon dioxide is dissolved and none is present in the gaseous state.[5]

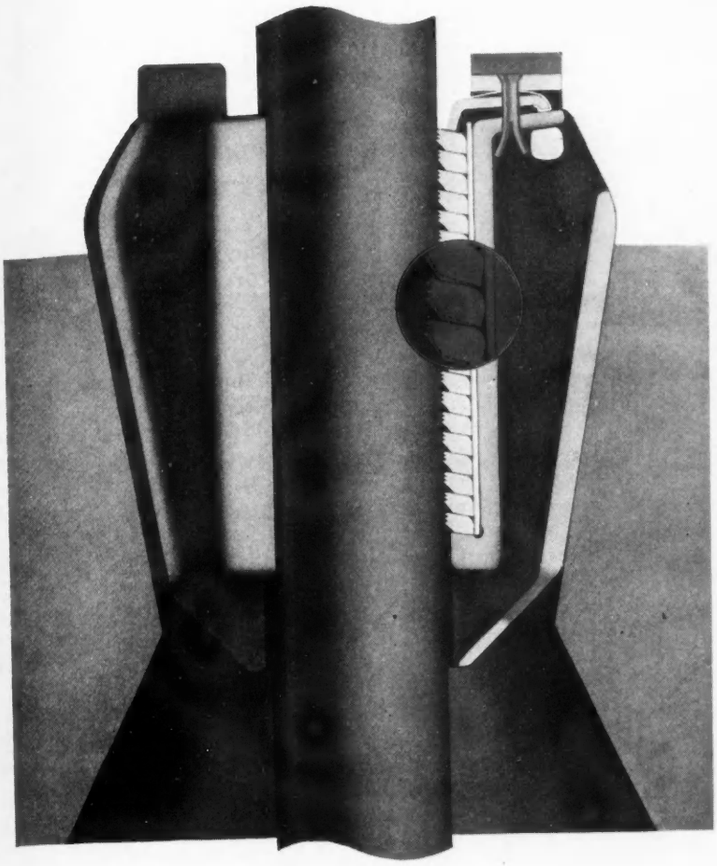
Pretreatment of mud used to drill through productive zones by the addition of pulverized calcium carbonate (ground limestone) has been discussed in detail by Miller and Shea.[6] Laboratory tests demonstrate that sheaths built up by limestone-treated mud are more susceptible to disintegration with an acid wash than those formed by untreated muds. A number of wells have been successfully drilled and completed in California with limestone mud. Operators report that the addition of 25 to 30 pounds of ground limestone does not affect the drilling properties of mud and that its use adds little to the cost of the well. The practice of acidizing such wells before completion has made it difficult to assemble data to prove the benefits of the method under oil field conditions. However, most of the operators who have experimented with ground limestone in mud believe that its use assures complete disintegration of the mud cake.

Mud sheaths existing in wells which have been on production tend to be permeated with oil. Experimental work in the laboratory which has been confirmed by the results in the field has shown that under these conditions it is essential that the chemicals employed for cleaning out have the property of wetting, or penetrating, oily mud. Otherwise, a satisfactory reaction cannot be obtained and the mud cake will not be affected by the chemical. This consideration applies to sheaths formed by limestone-treated muds as well as ordinary muds. It is believed that lack of recognition of this fact has been responsible for many of the unsuccessful mud sheath treatments of the past.

It has been the practice of operators in several California fields to chemically treat wells for removal of mud sheaths after the oil strings are landed and before the wells are put on production. The procedure has been to spot the chemical solutions in the perforated section as soon as the drilling fluid has been displaced from the hole. The results obtained have been difficult to evaluate, although several operators are convinced of the merits of the process and claim that on the average they have obtained greater production from wells treated before completion than from wells not treated.

Where the necessity of using chemical treatment to disintegrate mud sheaths can be anticipated, better results may be obtained if the chemicals are applied before oil is allowed to enter the hole. This practice avoids the more difficult treatment of oil-permeated mud. There is a possible objection to treatment at this time in wells penetrating large thicknesses of sands of varying permeabilities and effective rock pressures. It has been suggested that uncovering all sand faces under these conditions may result in loss of production from high into low pressure sands. In this event consideration might be given to treatment later in the life of the well when, due to depletion, pressure may be more nearly equalized.

Chemical service companies generally recommend that the treating solutions be agitated thoroughly in the perforated section of the well until mud stops coming into the hole. Down and up swabbing, patent pressure washers, patent vacuum washers, or pump circulation through a swab washer are the mechanical methods commonly used to obtain the desired agitation. The effectiveness of chemical treating methods for removal of mud sheaths are generally recognized. However, certain operators have questioned whether it has been the chemicals, the wash-



SLIPS sticking in BOWL MAKE FOR COSTLY PULLING DELAYS

WITH MISSION SLIPS
THE ROLLING MOVEMENT
OF THE DOGS FROM THE
PIPE BRINGS ABOUT

● IMMEDIATE RELEASE ●

Resulting in:

NO COSTLY PULLING DELAYS

MISSION MANUFACTURING CO.

HUMBLE ROAD - - - - - - - - - - - - - - - - - - **HOUSTON, TEXAS**

Mission Slips . . . Mission Valves . . . Mission Pistons . . . Mission Piston Rods . . . Mission Swabs

Sold Through Supply Stores Everywhere

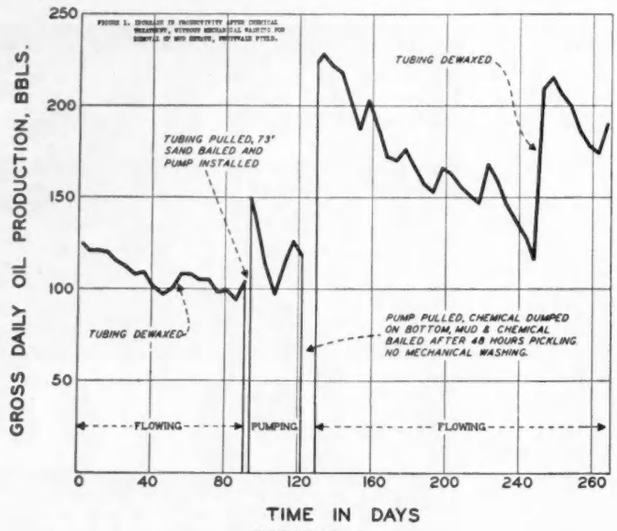


FIGURE 1

Increase in productivity after chemical treatment, without mechanical washing for removal of mud sheath, Fruitvale field.

ing, or the combination of the two that has been responsible for the results obtained.

It is known that agitation accelerates the rate of chemical action and laboratory tests have demonstrated that it applies to the chemical disintegration of mud cakes. In a well, the chemical solutions can attack the mud sheath only through perforations which are limited in both area and distribution. Under these conditions it is important that mechanical agitation be provided for the purpose of: (1) forcing fresh chemical behind the pipe and preventing the establishment of equilibrium conditions at the faces of the mud sheath, and (2) bringing the disintegrated sheath material into the perforated pipe where it can be removed by bailing or other means.

It has been of so much advantage to operators to increase the speed and probable effectiveness of the chemical treatment by providing mechanical agitation that few have gone to the expense and trouble of making field tests of a critical nature to demonstrate the merits of chemical treatment with agitation as compared to the results obtainable by mechanical washing without the use of chemical. Such data as have come to the attention of the writer indicate that where a bad mud condition exists, chemical treatment with agitation is more effective than straight mechanical washing, or chemical treatment without agitation. With less severe conditions, either of the other methods may remove the mud sheath as completely as chemical treatment with agitation, but the results are generally less certain.

An operator reports the case of a well redrilled in a low-pressure sand in Buena Vista with rotary tools and drilling fluid with a high colloidal content. When the mud was bailed from the hole for completion, it was found that little fluid entered from the formation. Repeated bailing tests during 81 tours of up and down swabbing of perforations showed a productivity of less than 5 barrels daily total fluid. After treatment with chemical, perforations were swabbed for 6 tours and the well was bailed for 3 tours to remove the quantities of mud and sand that entered. A rise of 310 feet in static fluid level was noted and the hole could no longer be bailed dry. The well was completed with a daily average net production of 40 barrels of oil and 100 barrels of water. Similar data are reported by other operators for two wells completed in low pressure sands.

The effectiveness of chemical treatment for the removal of mud sheaths that were obstructing production is illustrated in three curves included in this report. Figure 1 shows the recent production history of a well situated in the Fruitvale field. This well was completed with an initial production of 70 percent of the average of the adjacent wells and production before chemical treatment was equal to 60 percent of the average of the same wells on completion. Perforations were washed with hot water and all subsequent work on the well was performed during the period covered by Figure 1. The well was flowing by heads and production had declined to 100 barrels daily average when tubing was pulled on the 91st day. At this time, 73 feet of sand was bailed and a pump was installed. Pumping production averaged 120 barrels daily to the 122nd day when rods and tubing were pulled and mud treating chemical was spotted by bailer through the perforated section. After 48 hours pickling, (defined as standing for chemical action without mechanical agitation), the hole was bailed for 5 tours. Mud entered the hole in notable quantity after 3 tours of bailing and the static fluid level rose 500 feet. The well made three flows through 8⅝-inch casing, and about a barrel of pasty mud was found on bottom after each flow. Tubing was rerun to the point where it had been located previously and the well was permitted to produce by natural flow. Production has averaged 180 barrels daily for 161 days and the estimated additional gross oil recovery for the period is 9,900 barrels. The treatment cost was $940 total for chemical service and labor. Water production was not plotted since the total cut has been less than 0.5 percent during the life of the well.

The producing life of a pumping well after redrill is shown in Figure 2. On completion, perforations in this Fruitvale well were washed with a patent vacuum washer for 5 tours. Production declined to month 8 when the well was washed by circulating 300 barrels of oil through a swab washer traversing perforations. An estimated additional production of 1750 barrels was obtained in the 4 months before production returned to the normal trend. Daily average production was 36 barrels in month 29, when 30 barrels of mud treating chemical were spotted through a shop washer traversing perforations. After 10 hours pickling time, pasty mud was bailed from the hole during 5 hours. The pump was replaced at the same depth as before treatment. Additional oil recovery is estimated as 13,050 barrels net in 6 months. Current production is 108 barrels daily

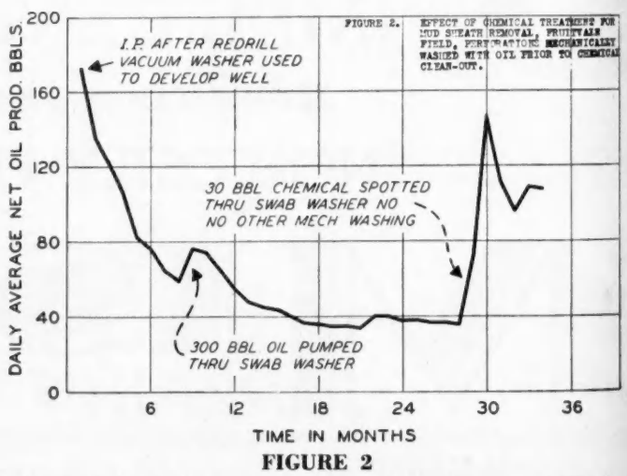


FIGURE 2

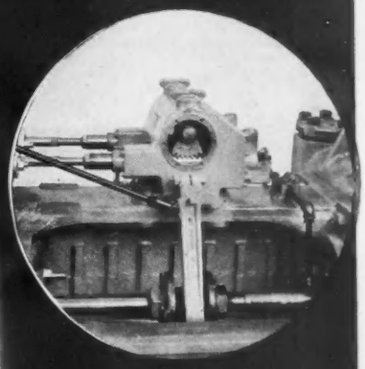
Effect of chemical treatment for mud sheath removal, Fruitvale field. Perforations mechanically washed with oil prior to chemical clean-out.

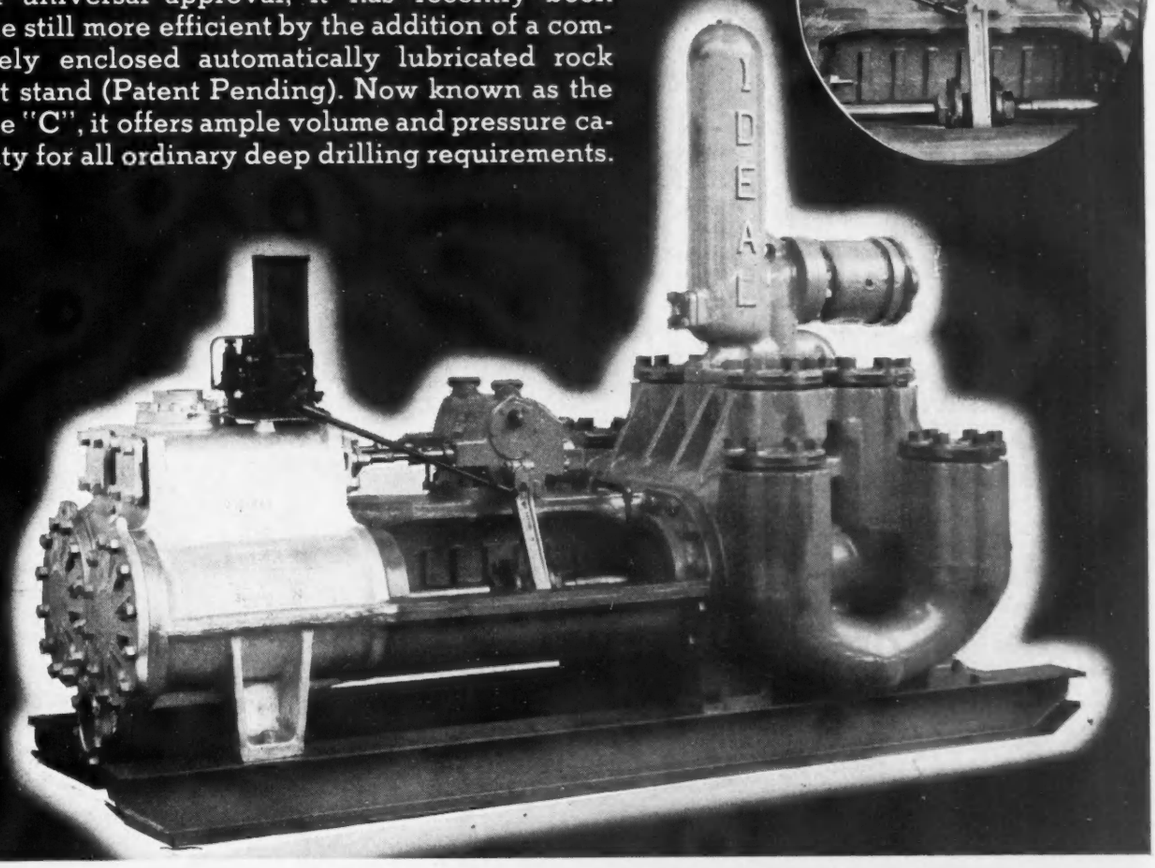
Type C **IDEAL** "Reg. U. S. Pat. Off." **14½" x 7½" x 18"**

STEAM SLUSH PUMP

The superior performance and economy of the Ideal 14½" x 7½" x 18" Steam Slush Pump is a matter of record in all deep fields.

Still retaining the time tested features that have won universal approval, it has recently been made still more efficient by the addition of a completely enclosed automatically lubricated rock shaft stand (Patent Pending). Now known as the Type "C", it offers ample volume and pressure capacity for all ordinary deep drilling requirements.





NSCO REG. U. S. PAT. OFF.

National

THE NATIONAL SUPPLY COMPANY OF DELAWARE

DIVISION OFFICES: PITTSBURGH, PA., FORT WORTH, TEXAS, TULSA, OKLA., TORRANCE, CALIF. · MAIN OFFICE: TOLEDO, OHIO

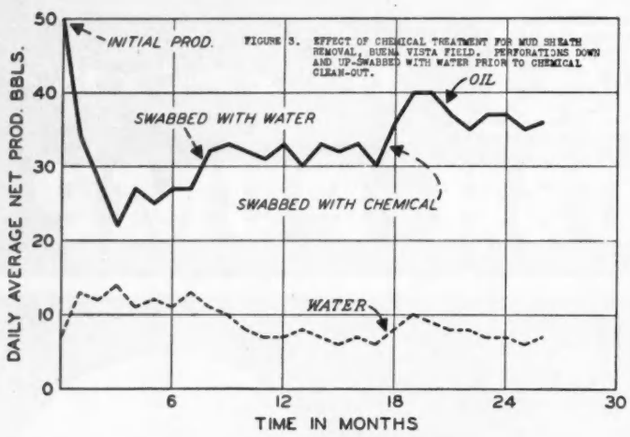


FIGURE 3

Effect of chemical treatment for mud sheath removal, Buena Vista field. Perforations down and up-swabbed with water prior to chemical clean-out.

or 72 barrels daily more than that obtained prior to treatment. The total cost of the chemical treatment was $980. Water production is not shown as the total cut has been less than 0.5 percent for the period described.

Figure 3 shows the production of a pumping well located in Buena Vista. Both the initial and settled productions were less than those of nearby wells. Perforations were pickled 22 hours with water and were down and up-swabbed for a total of 9 tours during month 8. A limited quantity of mud and sand was bailed from the hole after these operations. In month 18 the perforations were pickled 24 hours in a water solution of a mud-treating chemical and perforations were down and up-swabbed for 10 tours. The quantity of mud that came into the hole with swabbing and bailing, estimated as 50 barrels total, was so great that the lease foreman thought that the chemical might be forming mud from the shales present in the perforated section. A rise of 100 feet was noted in the static fluid level and a production increase of 9 barrels daily maximum was obtained with the pump depth unchanged. The total outlay of $580 for chemical and labor was repaid in 78 days time by the additional oil recovered.

Reports by 5 service companies covering mud sheath removal treatment at 450 wells in California indicate that a total of 279 treatments or 62 percent were economically successful (i.e., the total cost for chemical service plus labor was repaid by additional production recovered within a 90-day period). Practically all of the important producing areas of the state were represented.

FIGURE 5 (Right)

Views of carbonate scale from outside of tubing, Orcutt and Buena Vista. Light color specimen shows curvature of inside of five-inch casing. Dark colored specimens are of type which requires use of wetting agent in acid.

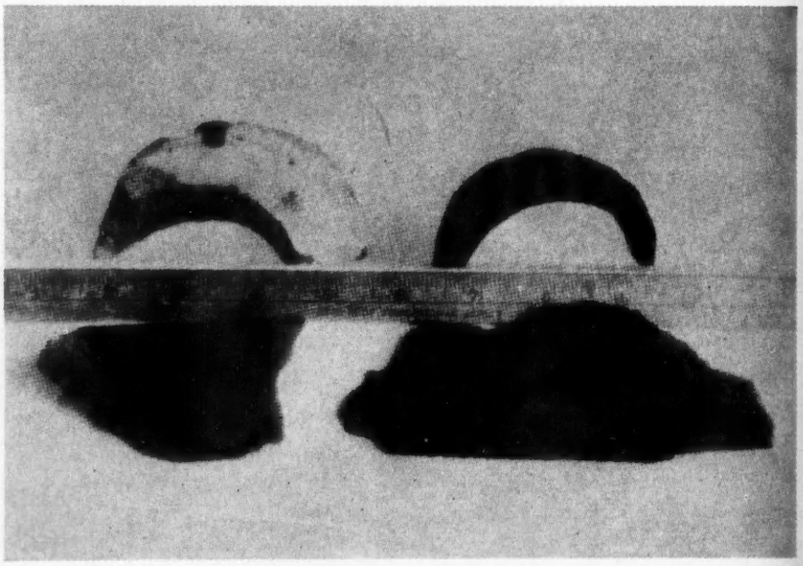
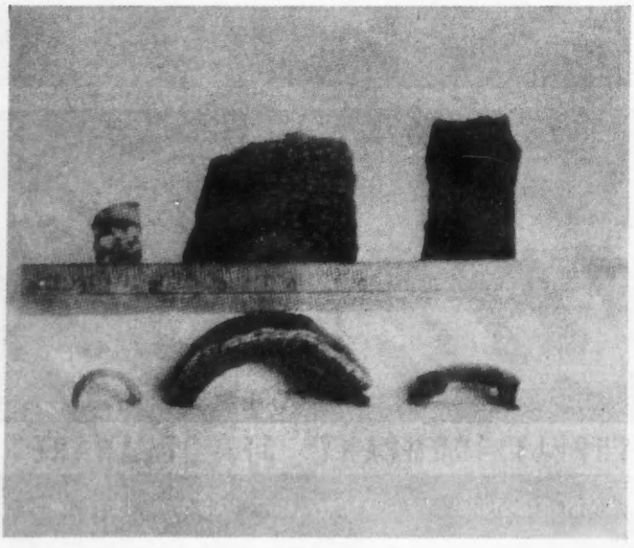


FIGURE 4 (Below)

View of cross-section and outer surface of carbonate scale. From left to right: Red Scale, Wheeler Ridge; Scale from outside of tubing, Coalinga East; and scale from inside of tubing, Wheeler Ridge.



A detailed investigation by the writer of mud treatments at 63 wells located in the San Joaquin Valley showed that 34 jobs or 54 percent were economically successful. This covered all of the chemical mud treating experience of 18 companies and the wells included were located in 8 different fields, namely: Kettleman North Dome, Buena Vista, Midway, Sunset, Lakeview, Fruitvale, Mountain View, and Edison. Fourteen of the 18 operators found that the production increases of successful jobs were sufficient to more than defray the expense of the unsuccessful jobs. The program of the other 4 operators covered 8 wells and was unprofitable as a whole. All wells included in this study were equipped so that satisfactory gauges were obtained before and after the chemical treatment.

Removal of Scale

The chief constituent of the common scale deposited in oil wells in California is calcium carbonate. Silicate and sulphate scale are reported in a few cases; however, commercial treatments for the removal of these types are not being attempted at this time. The car-

BUILD BETTER OIL TOOLS
WITH

TESCO *Electric*

STEEL CASTINGS

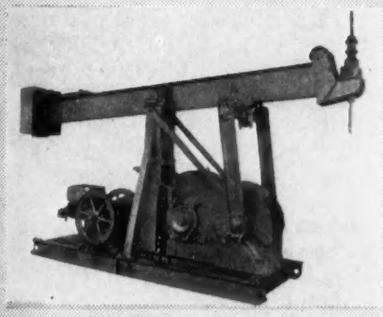
There are many good reasons why more and more oil tool manufacturers in the Gulf Coast are coming to us for their steel castings. To begin with, we operate an exclusive jobbing steel foundry, which permits us to devote our entire time to the production of the best possible steel for *your* particular requirements. And, as assurance of quality, we have brought together an expert organization to operate our modern equipment. We have established rigid scientific standards of practice, and control quality through constant chemical and physical analysis of both raw materials and the finished product.

"Steel Castings to Fit the Job" is the title of a booklet which tells the story back of TESCO Steel Castings. Write for your copy today.

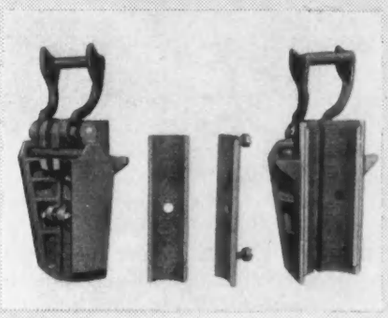
TEXAS ELECTRIC STEEL CASTING CO.

GOOD CASTINGS — TESCO — HOUSTON, TEXAS

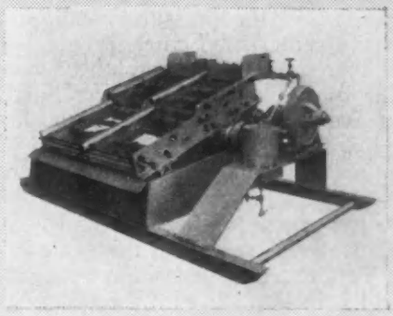
THREE POPULAR OIL TOOLS BUILT WITH TESCO STEEL



O C S PUMPING UNIT



T-I-W ROTARY SLIPS



KEIL MUD SCREEN

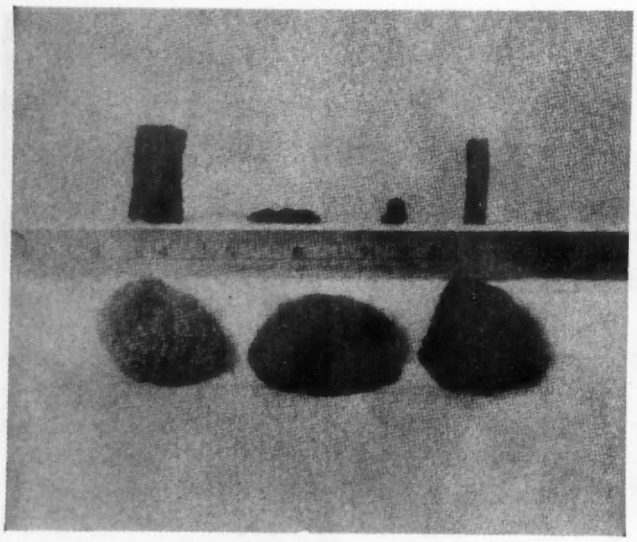


FIGURE 6

Carbonate scale from casing, Buena Vista. Bottom row, Vesicular scale. Top row, end and outer surface of Stalactites formed on inner face of perforated pipe.

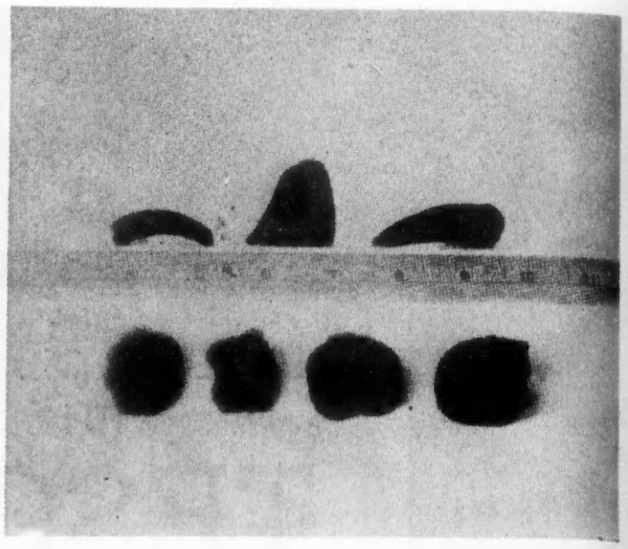


FIGURE 7

Carbonate scale coated with waxy-asphaltic residue; Buena Vista. Bottom row: Vesicular form. Top row, from left to right: Tubing scale and two pieces of casing scale showing curvature of inside of perforated pipe. All of these pieces are insoluble in acid unless a wetting agent is employed.

bonate scale of California has essentially the same chemical composition as the limestone formations of the Mid-Continent and Eastern fields.

Lime salts present in oil field waters in the form of bi-carbonates, Ca $(HCO_3)_2$, are probably responsible for common scale deposition. This material is unstable and with reduction in pressure or with agitation, calcium carbonate, $CaCO_3$, is precipitated as a solid following the escape of carbon dioxide, CO_2, in gaseous form[7]. Scale has been found: (1) on sucker rods, (2) inside and outside of tubing, (3) inside of perforated pipe, and (4) in the perforations. In view of the method of its formation, there is every reason to believe that scale may build up on the outside of perforated casing and on sand faces. Sample of scale from rods, tubing, and casing are shown in Figures 4, 5, 6 and 7.

Carbonate scale varies in color from white through shades of gray and brown to black. The texture varies from dense or fine grained through coarse grained to a porous or vesicular structure. The marked differences in physical appearance resulting from variations in color and texture are illustrated in Figures 4-7. Carbonate scale can be identified in the field by its hardness and solubility. The material can be scratched by a knife but not by a finger nail and is insoluble in water but dissolves rapidly in acid with the evolution of non-inflammable gas (note: all oily material should be washed from sample before the acid solubility test is made).

The rate of scale deposition in oil wells is dependent on the calcium bicarbonate concentration, the volume of water, and the pressure conditions. The scale shown in the center of Figure 4 (maximum thickness 5/16-inch) represents a 20 month's accumulation on the outside of tubing at a Coalinga East Side well pumping an average of 12 barrels of oil and 36 barrels water daily. An operator reports a 1-inch scale accumulation between 5-inch perforated pipe and 2½-inch tubing in 21 months time at a well located in the Orcutt field. Daily average production was 16 barrels oil and 40 barrels water. A sample of this scale is illustrated in Figure 6. This extreme deposition occurring in the old Orcutt field is in keeping with the observation of certain operators that scale deposition becomes increasingly serious as fields near depletion.

Carbonate scale dissolves in the inorganic acids with the evolution of carbon dioxide gas. Acid treatments to remove scale in California have generally employed hydrochloric (muriatic) acid because chloride salts have a high degree of solubility and the acid offers less hazard in handling. Nitric acid is difficult to inhibit (i.e., prevent action on metal) and is more dangerous to handle than muriatic acid. Sulphuric acid is objectionable because it forms a relatively insoluble precipitate, calcium sulphate (gypsum), on reaction with scale.

The muriatic acid employed in scale removal operations varies from approximately 10 to 17 percent hydrochloric concentration by weight. The concentrated muriatic acid generally supplied (20° Be' commercial grade) has a 31.4 percent hydrochloric content. Common dilutions are 12 gallons of 20° Be' acid to 30 gallons of water to make a barrel of 10.0 percent acid; and 21 gallons of 20° Be' acid to 21 gallons of water to make a barrel of 16.9 percent acid. A barrel of 15 percent acid will dissolve approximately 77.3 pounds or 0.45 cubic feet of carbonate scale[5].

To minimize corrosion of well casing, tubing, and pump equipment, it is desirable that the acid employed in well washing operations contain an inhibitor.[8 9 11] Inhibitors are substances which markedly decrease the rate of attack of acid on steel without retarding the acid's reaction with scale. Laboratory tests show that 15 percent muriatic acid without an inhibitor at 115° F. will dissolve a weight of steel casing equal to a uniform penetration of 0.022-inch in 24 hours. Addition of a suitable inhibitor to 15 percent acid reduces the acid penetration to 0.0001-inch under the same test conditions. Green reports that hardened steel and cast iron will be preferentially attacked by acid if low carbon steel is present.[12] Chromium-plated plungers should be removed from a well which is to be acidized, as acid readily attacks chromium. The inhibitors now in use offer no protection to chromium plating.

Carbonate scale deposited at wells in several fields is practically insoluble in ordinary acid and can be cleaned out effectively only when a suitable wetting agent is added to the acid solution. A wetting agent

COMPARE the PERFORMANCE
Location of well
Best previous belt life
Goodyear COMPASS
Oklahoma
8 months
23 months—still in use
Arkansas
5 months
35 months—still in use
Oklahoma
8 months
18 months—still in use
Oklahoma
3 months
24 months
Pennsylvania
8 months
62 months—still in use
Oklahoma
9 months
15 months—still in use
HUNDREDS of records like these attest the superior performance of Goodyear COMPASS Oil Well Belts on the severest pump drives in every field. The reason, as the cut-away section of the photograph shows, is the COMPASS carcass of heavy rope-cords that carry the load. This patented ply-less construction reduces stretch to a minimum, eliminates time losses in take-ups and repairs, insures far longer service and lower belt costs. The G.T.M.—Goodyear Technical Man—will be glad to give you further performance-evidence. To have him call, write Goodyear, Akron, Ohio, or Los Angeles, California — or the nearest Goodyear Mechanical Rubber Goods Distributor.
BELTS
MOLDED GOODS
HOSE
PACKING
Made by the makers of Goodyear Tires
THE GREATEST NAME IN RUBBER
GOODYEAR

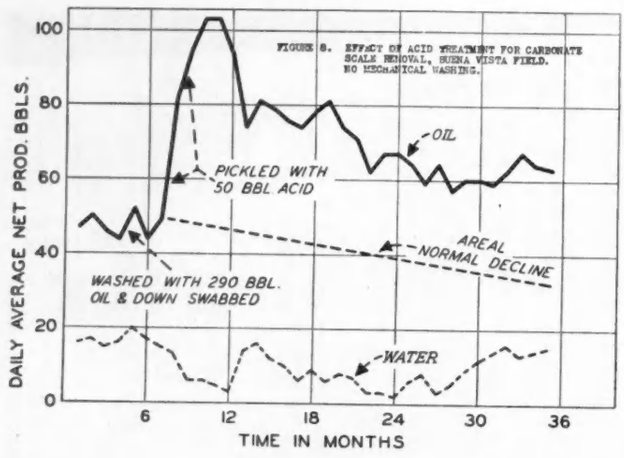


FIGURE 8

Effect of acid treatment for carbonate scale removal, Bunea Vista field. No mechanical washing.

has the property of lowering the interfacial tension between the acid and the oil-coated surface, thus permitting penetration of the acid to the carbonate material. Treatment of this type of scale is essentially the same as that previously discussed for oil-permeated muds. However, it appears that in certain cases coatings of waxy-asphaltic residues, rather than liquid oil, are responsible for the resistance to attack by ordinary acid. Carbonate scale requiring the use of a wetting agent in the acid is shown in Figures 5 and 7.

Presence of scale on rods, tubing, or in the casing of a well does not prove that sufficient scale has precipitated in the perforations or behind the pipe to obstruct production. A detailed analysis of the decline curve, cumulative recovery, and comparisons of the same data for similarly completed wells in the area is essential in determining whether a worthwhile production increase may be expected as the result of scale removal treatment.

The oil sand and water production, depth pressure, pump depth, location of productive sands, probable point where production is scaled off, and possible presence of "thief sands" are factors which determine the best method of introducing the acid. The job should be planned so that the acid will be maintained in contact with the scale until the scale has been completely dissolved or the acid spent. Spotting of acid by bailer, siphoning through tubing hung near bottom, or pumping in between tubing and casing are the methods generally employed. Several operators report production losses at wells where acid was forced away into sands.[10] Mechanical agitation tends to speed the reaction, but in practically all cases satisfactory results have been obtained where perforations were pickled without agitation.

The amount of acid necessary to clean out all of the scale cannot be predetermined due to uncertainty as to the volume of scale to be dissolved. Most operators have been employing treatments of acid equal to between one and two times the capacity of the perforated section. After 12 to 24 hours pickling with the well casinghead maintained at atmospheric pressure, samples of the acid are obtained by pumping or thiefing. The acid concentration is determined by titration or its effectiveness in dissolving scale is checked. The acid treatments should be repeated until the presence of unspent acid in the hole after pickling shows that the scale has been completely cleaned out.

The beneficial results obtained by removing carbonate scale from a pumping well in Buena Vista are shown in Figure 8. Perforations were washed in month 5 by pumping 290 barrels of oil through a shop washer traversing perforations, followed by down-swabbing. Pieces of scale bailed after the wash job and a production study of the well suggested the desirability of acidizing. A 50-barrel treatment in month 8 increased the net oil production from 49 barrels daily to 81 barrels daily. After a second pickling with 50 barrels of acid in month 9, oil production increased to a maximum of 103 barrels daily. Production after 30 months declined to 63 barrels daily, or 31 barrels daily more than the normal expectation. There was no significant change in water production or pump position during the period shown. Additional oil recovered in 30 months is estimated as 25,900 barrels. The total cost of labor and material for the two acid jobs was $540.

The production curve presented in Figure 9 covers a marginal pumping well in Midway field. The well was shut down with a production of 3 barrels daily oil and one barrel daily water in month 6. After scale was cleaned out of the inside of the perforated pipe with tools in month 12, a maximum production of 15 barrels daily oil and 10 barrels daily water was obtained. With production averaging 5 barrels daily oil and two barrels daily water in month 40, the perforated pipe was treated with a heat-generating caustic chemical and down-swabbed. This treatment represented a misapplication of chemical as these substances will not dissolve scale. After pickling perforations with 10 barrels of acid in month 47, production increased to a maximum of 22 barrels daily oil and 14 barrels daily water. The total cost of the job was $170 and the additional oil recovery is estimated at 1960 barrels in 5 months. The greater effectiveness of chemical over mechanical clean-out methods for removing scale is clearly shown by the work at this well.

A service company reports that out of 44 wells in California chemically treated for carbonate scale removal, 11 jobs or 25 percent were economically successful (i.e. the cost of chemicals plus labor was

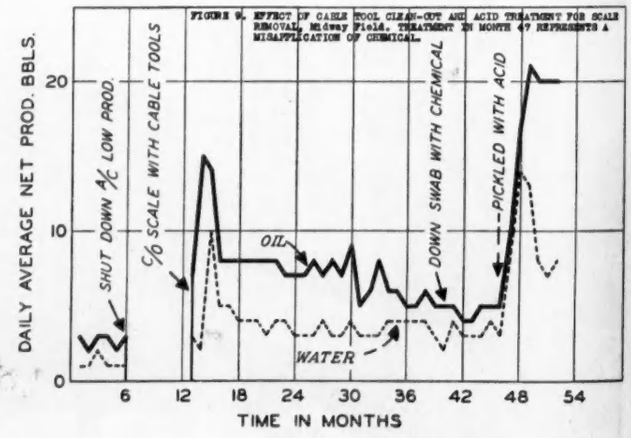


FIGURE 9

Effect of cable tool clean-out and acid treatment for scale removal, Midway field. Treatment in month 47 represents a misapplication of chemical.

MODEL-A
ROTARY

BUILT FOR USE

NOT *merely* FOR SALE

Experience in manufacturing a product for sale can produce many desirable features; such as modern lines, symmetrical design, and fine appearance. Intensive development and manufacture of a product for use on a highly competitive basis, however, must of necessity assure efficient, economical operation and upkeep; superior performance; and outstanding results in service.

For more than fifteen years Elliott Core Drills have been manufactured for use by this company in conducting a coring service to oil companies. Elliott is much closer to actual coring practice, therefore, than if these products were merely manufactured for sale. The first hand experience thus gained has enabled development and improvement of its equipment in line with field conditions and requirements; and to insure efficient, economical and satisfactory performance on the job.

Elliott pioneered and developed oil well coring practice to its present stage with Elliott Core Drills - - - for more than fifteen years the leading coring equipment - - - available to and used by oil companies in all parts of the world.

ELLIOTT *Core* DRILLS

ELLIOTT CORE DRILLING COMPANY
4731 East 52nd Drive, Los Angeles, California, U.S.A.
Export Office: 420 Lexington Avenue, New York City

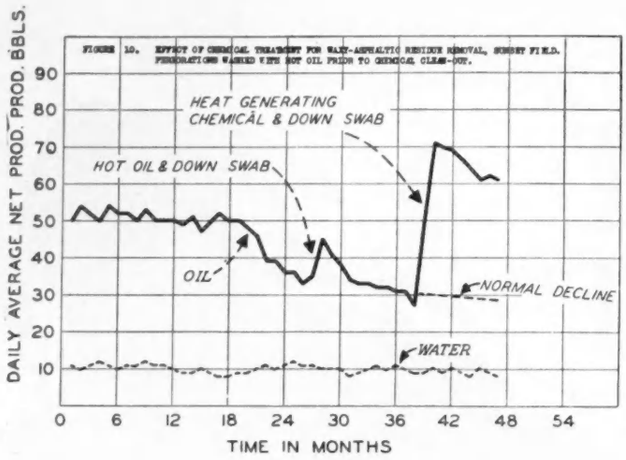


FIGURE 10

Effect of chemical treatment for waxy-asphaltic residue removal, Sunset field. Perforations washed with hot oil prior to chemical clean-out.

repaid by additional production within a 90-day period). In addition, an investigation made by the writer of scale clean-out with acid at 19 wells located in the San Joaquin Valley showed that 9 jobs or 47 percent were economically successful. This covered all of the scale treating experience of 5 operators at wells situated in Coalinga East, Buena Vista, Midway, Sunset, and Wheeler Ridge fields. There was no duplication of wells in the service company's report and the writer's investigation. All companies report that the production increases obtained on their successful jobs were sufficient to more than defray the expense of the unsuccessful jobs.

Removal of Waxy-Asphaltic Residues

The opinion has been held by many operators that deposits of gummy paraffin and asphaltic material in perforations or on faces of sands have been responsible for the restriction of production in a number of wells in California. A limited amount of laboratory work has been done on gummy material recovered from the perforated section of wells, but the exact composition has not been made public. Until such time as the composition of this material is definitely determined and a better term developed, the writer suggests that it be designated as "waxy-asphaltic residue."

A service company reports that the perforations of a liner recovered at Huntington Beach were plugged with waxy-asphaltic residues. The author has verified reports of the recovery of this type of material from the perforated section of a well in Coalinga East and another in the Sunset field.

Liquefaction of waxy-asphaltic residues by solvent action or application of heat generating caustic chemical appears to be the most effective way of cleaning out this material. Five waxy-asphaltic residue treatments are reported by service companies of which 3 were economically successful. The writer has verified two of the jobs, an unsuccessful solvent treatment in Fruitvale and a successful heat generating caustic treatment in Sunset.

Figure 10 shows the production history of the pumping well in the Sunset field which was successfully treated for removal of waxy-asphaltic residue. After averaging 50 barrels daily oil for 19 months, production declined rapidly to 35 barrels daily at month 27 despite repeated bailing jobs and pump changes. Accumulation of gummy material was noted on the pump cages and standing valve anchor. Hot oiling and down-swabbing of perforations temporarily increased the production of 45 barrels daily but the rapid decline continued and by month 38 production was 27 barrels daily. Accumulations of waxy-asphaltic residue were noted each time the pump was pulled. Surface tests with heat-generating caustic chemicals demonstrated the effectiveness of these substances in breaking down the residue material.

The perforations were loaded with water and 200 pounds of chemical were dropped down the casing. After pickling 16 hours, perforations were down-swabbed 4 hours. A quantity of "B.S." was bailed from the hole during 16 hours and the first 8 hours pumping production had to be turned to the sump on account of residue content. Production was increased to 71 barrels daily maximum with a decline to 61 barrels daily after 9 months. The total cost of the chemical and labor was $250. Additional oil recovery is estimated as 9330 barrels in 9 months.

Conclusions

(1) Chemical treatment of wells in California to increase productivity should not be regarded as a cure-all. It cannot create production and is not effective at this time as a means of increasing reservoir permeability. At best, it clears sand faces and perforations for the entry of production. (2) Chemical clean-out of mud sheaths, carbonate scale, and waxy-asphaltic residues has proven profitable to the California oil industry despite a rather high percentage of failures. Where applicable, these methods are generally more efficient than the older mechanical methods.

(3) In many cases treatment failures have been the result of ill-advised selection of wells and chemicals. With more careful selection of wells and increased knowledge of proper chemical application the percentage of unsuccessful treatments should show a marked decrease.

(4) Chemical clean-cut methods are becoming an accepted feature of California production practice.

Acknowledgment

The writer wishes to express his appreciation to the various oil and chemical service companies contributing data on chemical clean-out treatments and results. Many of the ideas presented in this paper were developed in discussion with personnel of the operating and service companies.

Bibliography

[1]A. C. Rubel, Stanley Gill, and C. P. Parsons: "A Study of Rotary Drilling Fluids," Amer. Pet. Inst. Prod. Bulletin 209, p. 33-64 (1932).
[2]P. H. Jones and E. C. Babson: "Evaluation of Rotary-Drilling Muds," Amer. Pet. Inst. Drilling & Prod. Practice 1935, p. 22-33.
[3]Roy Silent: "Circulation Losses," Amer. Pet. Inst. Drilling & Prod. Practice 1936.
[4]G. O. Suman: "Flooding, Washing, and Hydraulicking Wells," Oil Weekly, May 22, 1931, p. 31-38.
[5]"The Chemistry of Acidizing," The Acidizer, a Dowell Incorporated Trade Publication, No. 4 (November, 1936).
[6]H. C. Miller and G. B. Shea: "Chemical Method for Removing Mud Sheaths in Oil Wells," Bur. Mines Rept. Investigations No. 3249 (1934).
[7]W. H. Twenhofel: "Treatise on Sedimentation," p. 319-324. Book.
[8]H. F. Wright and R. L. Ginter: "Some Physical and Chemical Questions Relating to Acid Treatment of Oil Wells," Oil and Gas Journal, Vol. 33, No. 44, p. 53-64.
[9]R. B. Newcombe: "Acid Treatment of Michigan Oil and Gas Wells," Amer. Pet. Inst. Drill. & Prod. Practice 1935, p. 97-106.
[10]F. B. Plummer and R. B. Newcombe, Jr.: "Oil Sands as Well as Lime Formations Respond to Proper Acid Treatment," Oil and Gas Journal, Vol. 34, No. 23, p. 44-46.
[11]"Inhibited Acid," The Acidizer, a Dowell Incorporated Trade Publication.
[12]E. F. Green: "Chemical Treatment of Wells to Increase Oil Production," Oil and Gas Journal, Vol. 35, No. 38, p. 32.
[13]C. E. Reistle, Jr.: "Paraffin and Congealing Oil Problems," U. S. Bur. Mines Bulletin 348 (1932).

A Trip to Anahuac

ONE OF THE MOST SCIENTIFICALLY OPERATED FIELDS IN GULF COAST

By CHARLES LEYENDECKER, Staff Writer

PART 4

Gas Conservation and Oil Reserves

EVERY step is being taken to conserve the gas at Anahuac. Like Conroe, Anahuac has a large gas cap above the saturated oil sands. The oil sands are contacted around 7040 feet and the gas/oil ratio at Anahuac is around 500 to 1. To keep this low ratio the operators have set casing through the gas cap and on top of the saturated oil sand to give the field a longer flowing life.

With this practice, the gas sand (varying from 185 feet thick in Sun Oil Company's White 5 to none in Humble Oil & Refining Company's Middleton 6) is cased and cemented, preventing disturbance of equilibrium, except as desired. Wells are drilled to a depth of 60 to 77 feet above the water level, depending on whether 7172 feet or 7144 feet is used.

From experience of early wells at Conroe, Humble Oil & Refining Company found out that if casing was set above the gas/oil contact that such wells would yield from 50,000 to 60,000 cubic feet of gas with every barrel of oil taken out of the ground. The conservation of this gas will undoubtedly prolong the flowing life of Anahuac beyond what it would have been under the old methods of wide open flow.

Anahuac gas is found in a free state and is in close contact with the oil. There is a maximum of 275 feet of gas sand found at Anahuac on the crest of the structure, and the minimum is around 20 feet near the edge, while the average thickness is from 80 to 100 feet. The largest body of gas sand was found in the northwest corner of Section 58 of the H. & T. C. Survey, in Humble's Middleton 23. The well cored over 365 feet of oil and gas sand. Around 275 feet was gas sand and the 90 feet was oil sand. There are three highs in the field where large bodies of gas sand are found. The smallest amount of gas sand is encountered on the west, northwest and northeast flanks, where it ranges from 20 to 50 feet in thickness. In all probability wells located in these areas will be the first to go on the pump.

The water level was established at Anahuac by Humble Oil & Refining Company's Middleton 3, H. & T. C. Survey, Section 58, when the well was drilled to 7172 feet and was in salt water sand. Top of the salt water sand was encountered around 7144 feet. The well was later plugged back and completed around 7100 feet.

LARGEST in area of any salt dome field in the Gulf Coast, and among the leading producing and crude oil reserve areas, the Anahuac field is of economic interest. Enhancing the importance are the modern scientific operating methods being employed. The accompanying discussion is the fourth and final installment.

Gas Reserves

In 257,000,000 barrels of recoverable oil with 300 cubic feet of gas absorbed in each barrel it is estimated that approximately 77,000,000,000 cubic feet of gas (at atmosphere) is absorbed in the Anahuac oil. Taking into consideration that there is 298,000,000,000 cubic feet of gas in the gas cap then the field has a total gas content of around 375,000,000,000 cubic feet of gas.

In arriving at the above figures the field was broken down into four sections, which included from the R. M. White lease on the north side to the southern tip and then back to the eastern part of the field. It was estimated that the total cubic content of the gas cap was 12,082,000,000 cubic feet. By multiplying the porosity (15 percent) by the total cubic contents then there are 1,812,000,000 cubic feet of .65 gas compressed at 200°F. and under pressure of 3000 pounds per square-inch.

Combining Boyles and Charles laws and using 460° as the absolute temperature there are 6.1 cubic feet for the underground volume of each 1000 feet of surface gas, (at atmospheric pressure and at 80° temperature). Taking 1,812,000,000 cubic feet contains 6.1 feet, (displacement of 1000 cubic feet at surface) 298,000,000 times or, we have 1000 cubic feet times 298,000,000, or 298,000,000,000 cubic feet in the gas cap. Adding the 77,000,000,000 cubic feet of gas absorbed in the oil and the 298,000,000,000 in the gas cap, the total gas at Anahuac is estimated at 375,000,000,000 cubic feet.

Bottom-Hole Pressure

Average bottom-hole pressure at Anahuac on January 1, 1936, was 3240 pounds, and on January 1, 1937, it had declined to 3182 pounds, or a drop of 58 pounds while producing 2,584,000 barrels. This is a decrease in pressure of approximately 23 pounds per million barrels of crude produced during the period. From June 1, 1936, to January 1, 1937, pres-

sures showed a drop of 24.4 pounds in 6 months. This rather large decline was influenced no doubt by completion of 108 new oil wells during 1936, and by the newness of the field. It is likely that the future will not see such a big decrease in bottom-hole pressure.

There has been an equalization of pressure in the field. A number of wells are shown to have registered increased pressures while others have shown decreases. A study of the shift in bottom-hole pressures have benefitted low pressure areas while the high pressure regions have registered drops. Key wells are tested every 5 or 6 months, and are referred to at 7015 feet sub-sea.

It has been estimated at the Anahuac reservoir pressure and temperature, approximately 300 cubic feet of gas is absorbed in a barrel of oil, a sufficient volume of gas at the temperature to make the viscosity of the emulsion equal that of kerosene. Its practical beneficial effect is the determination of the allowable "gas/oil" ratio, which means the cubic feet of gas (at atmospheric pressure) permitted to flow through the separators with each barrel of oil. At Anahuac the maximum is fixed at approximately 500 barrels while the average ratios are much lower.

At Anahuac all operations are directed to conservation of the gas factor especially conservation of the enormous reserve above the oil sands. Wells are drilled through the gas sand into the oil sand, then cemented, so as to thoroughly control equilibrium and local migration.

Drilling locations at Anahuac are scientifically made, in that rows of wells on different contours are completed, to prevent the too early and non-uniform encroachment of edge water. A steady, slow movement of this water is desirable, as a controlled and balanced water movement will have its effect in increasing ultimate recovery, or percent of extraction, to supplement expansion of the absorbed gas and to maintain reservoir pressure.

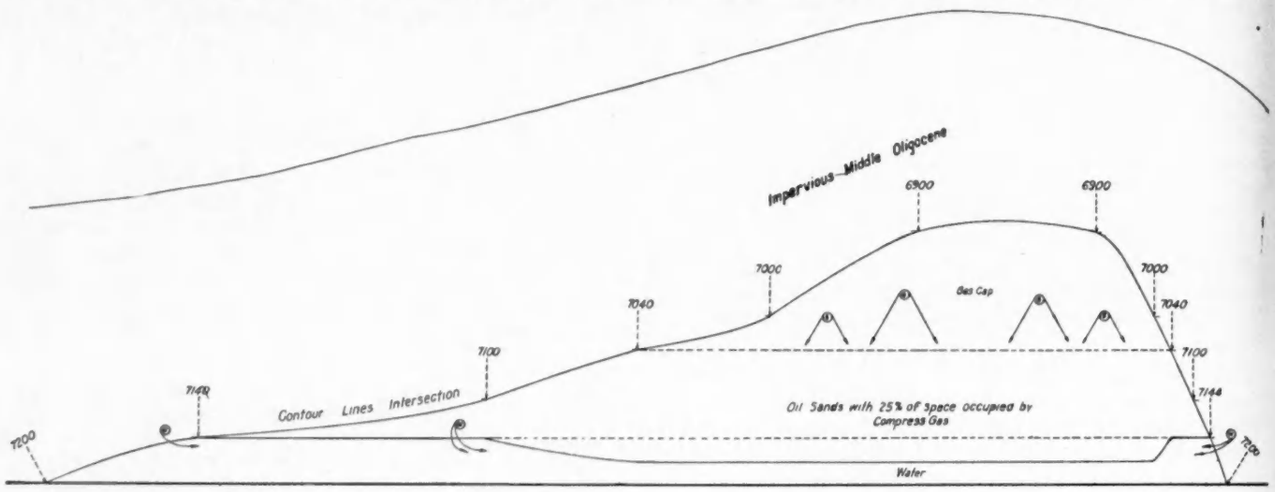
Tests at Anahuac have determined that the absorbed gas has sufficient energy to lift the oil with but a quarter expenditure of the energy of the gas now confined above the oil level in the gas cap.

During the later producing stages of the flowing life at Anahuac, every effective utilization of reservoir energy including natural water drive can be and will be made.

It is estimated by those more informed after a very careful check of the producing conditions, the various pressures, the actual work involved and the theoretical work available, an extraction factor of 90 percent is considered safe and conservative for ultimate recovery of Anahuac crude.

Saturation

In the consideration of the saturation percentage, the factors controlling the flow of oil through the sand have been studied by several leading geologists. These factors include the pressure decline with withdrawal, the diameter of the sand grains, the porosity and the viscosity. Flow of oil varies in direct proportion to the pressure decline; as the square of the diameter of the sand grains; as the 3.3 power of the porosity, and as the reciprocal of the viscosity. The cubic feet of the space occupied by the oil in turn displaced by the absorbed gas, at the pressure of 3000 pounds and a temperature of 200°F. has been carefully calculated.



HYPETHETICAL SECTION B (GAS)

SCALE: VER. 1"=100'
HOR. 1"=1000'

FIGURE 12

In round figures the absorbed gas occupies 25 percent of the oil space, (see Figure 12) which is to say under the reservoir conditions of temperature and pressure, the oil is an emulsion, which on reaching the surface has a volume of only 75 percent of that occupied in the reservoir. The saturation factor is then used at 75 percent.

This means that an acre of 43,560 square feet underlain by a sand containing 15 percent porosity would contain approximately, 6534 cubic feet of voids for every acre-foot of sand. A barrel contains 5.6146 cubic feet, therefore for each foot of sand under the acre there are approximately 1160 barrels of emulsion. Actual oil is 75 percent of 1160 barrels or 870 barrels, while gas (compressed) is 25 percent or 290 barrels of space. The extraction of 90 percent will recover 90 percent of the 1160 barrels

It "couldn't be done"—so MOLY did it

Parallel to the difficulty of putting square peg into round hole was the problem of a machinery manufacturer who needed a stronger gear, when space limitations prohibited making it larger.

A Manganese-Moly steel was used—and the problem was solved! . . . Without increase of size or weight, the needed strength was obtained.

Doing the unusual—saving material; increasing weight, strength ratio; simplifying fabricating processes; speeding production and reducing its costs—all have become a regular thing in the fast-moving history of industry's most versatile alloying element. Steels and irons containing Moly are demonstrating their many advantages both in the making and in the performance of many important products and equipment parts.

VISIT THE CLIMAX EXHIBIT IN BOOTHS 313, 315, 317 AT THE FOUNDRY SHOW, MILWAUKEE—MAY 3 TO 7

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

or 785 barrels of oil in the tank for every foot of oil sand under the acre. In other parts of this story the writer has placed the per-acre-foot recovery of Anahuac crude at 770 barrels, which is a very conservative figure. The 290 barrels of compressed gas gets the oil into the tank then escapes, having done its job.

In 1935 the Supreme Court of Texas (Brown vs. Humble Oil & Refining Company) ruled: "It has now been recognized that when oil fields have been fully tested and developed, experts can determine approximately the amount of oil and gas in place in a common pool and can also equitably determine the amount of oil and gas recoverable by the owner of each tract of land under certain operating conditions."

Herein with the help of leading geologists the writer has made an effort to determine "from the operating conditions" and from the definite "results of tests and development" the "approximate amount of oil in place in the common pool." In any accurate subsurface work there must be allowed in the factors of computation, a margin of error, as: Thickness of sandstone is subject to 20 percent error. At Anahuac the oil sand should be productive from the water table to the bottom of the gas cap. The water table is used herein at 7144 feet. The water table, as fixed by Humble Oil & Refining Company's Middleton 3, is at 7172 feet. The difference of 7172 and 7144 feet is 28 feet, which is entirely discarded in all calculations herein to partly compensate for possible variations in sand thickness. Variations in water table on account of permeability of sands are subject to 10 percent error. Wells on or above the 6850-foot contour show a weighted average of oil sand thickness of 133 feet; wells on or above the 6900-foot contour show a weighted average oil sand thickness of 119 feet. Wells on or above the 6950-foot contour show a weighted average of oil sands around 113 feet; and completions above the 7000-foot contour show a weighted average oil sand thickness of 111 feet. For estimating production above the 7000-foot contour, 100 feet of oil sand is used.

Between the 7000-foot and the 7050-foot contours a number of wells have been completed with a weighted average producing sand of 86 feet, a sand of 75 feet is used herein. Between the 7050 and 7100-foot contours is a weighted average producing sand depth of 52 feet. Herein the level is estimated at 40 feet. An estimated weighted average of sand thickness between the 7100 and 7125 levels is placed at 16 feet. Therefore it is conservatively estimated that the sand thickness above the 7000-foot contour is 100 feet, 75 feet between the 7000 and 7050 foot contours, 40 feet between the 7050 and 7100-foot contours and 16 feet between the 7100-foot contour and the water level.

Porosity of the sand at Anahuac is fixed at 15 percent. A liability of error in porosity was constantly in mind during the detail of this work. Many cores show 20 percent porosity, very few showed 17½ to 18. There is practically no cementation in the sand, therefore 15 percent porosity is a fair conservative figure. In many fields the presence of joints, cracks, fissures, and lenticular sands make estimates liable to 20 percent error. This is not the condition here where the folding is regular with relatively gentle dips. There are no intrusives, contact metamorphism, or joints in the Frio, which is nonstratified. Reports on fields drilled up in highly competitive development campaigns, and without inter-company agreement as to operating practices, such as casing points, oil and gas ratio, water levels, etc., have allowed 20 percent margin of error for the effect of water on the viscosity of the oil, the percentage of gas coming out of solution, and the actual time of water encroachment.

With the Anahuac production conditions and an excellent control of underground physical conditions, this margin of error is not necessary. These factors have been given the neccesary weight in fixing the saturation and extraction percentages.

The product of (porosity 15 percent) x (Saturation 75 percent) x (Extraction 90 percent) equals .10125 for the factor of recovery. Therefore, 7758 x 10.12 percent equals 785 barrels of reasonable expectant recoverable Anahuac crude, for each foot of oil sand under each producing acre or: 16 feet of sand equals 12,500 barrels an acre recovery, 40 feet of sand equals 31,400 barrels an acre recovery, 75 feet of sand equals 58,800 barrels an acre recovery. and 100 feet of sand equals 77,850 barrels an acre recovery. (See Table 8).

TABLE 8

Estimated Ultimate Recovery of Anahuac field, by Companies, January 1, 1937

COMPANY	Estimated Ultimate Recovery	Cumulative Production	Remaining Reserves	Percentage of Total Reserves	Estimated Ultimate Recovery per Acre	Recovery to Date per Acre	Indicated Remaining Reserve per Acre
Humble Oil & Refining Co.	226,000,000	2,416,000	223,584,000	87	47,181	504	46,677
Sun Oil Co.	29,000,000	490,000	28,510,000	12	56,862	960	55,902
Gulf Oil Corp.	2,000,000	41,500	1,958,500	1	8,000	166	7,834
Totals	257,000,000	2,947,500	254,052,500	100	112,043	1630	110,413

Well Spacing

One well to 20 acres has been drilled at Anahuac, and the field undoubtedly offers evidence that wide spacing and conservative production practices give a minimum formation pressure decline. Like Conroe, Anahuac is producing from a fairly uniform sand body. There have been 155 wells. However, only 139 are flowing oil, while two are producing gas. This field has produced 2,947,500 barrels in two years. Most of the wells flow satisfactorily, and only a small amount of salt water has been drawn into wells that originally showed no water.

Anahuac is probably half developed, but a long period will be required to determine whether the wells were perfectly spaced. Even at the end of an extended production period, advocates of close well spacing will be able to attack the conservative plan since there will be no way to prove or disprove the contention that a close well spacing plan would have given better results.

One well to 10 acres at Anahuac would have doubled the number of outlets, and roughly would

These ADVANTAGES OF PETRECO Electromatic DEHYDRATION ARE Eminently Important to the TRANSPORTATION DEPARTMENT

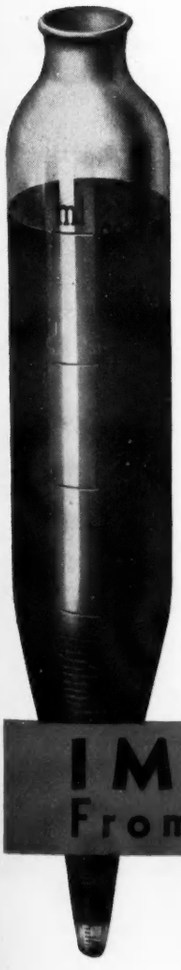
TRANSPORTATION

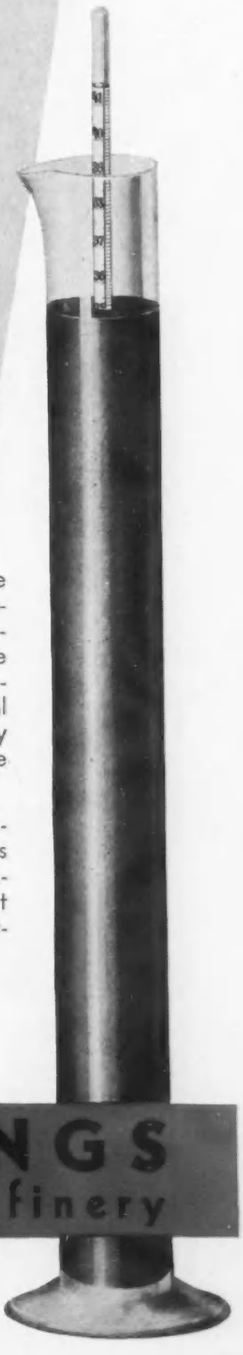
PIPE LINE

Lower Viscosity
Lower Pressure
Higher Line Capacity
Lower Pumping Costs
Lower Pipe Line Maintenance
Less Corrosion
Less Tank Bottom Disposal
Increased Tank Storage

MARINE

Lower Shipping Costs
Increased Tanker Capacity
Less Tank Bottoms





The disadvantages and added expense of handling wet oil extend all the way from the well through the refinery. Whether they are borne by the production, transportation, or refining department; or whether they are shared by each; really is immaterial. Of prime importance is the fact that the financial losses resulting therefrom actually occur, even though they may not be apparent.

Petreco Electromatic Dehydration of all emulsified crude immediately after the oil is produced will eliminate these losses—it also provides specific advantages and savings that are cumulative and accrue to all departments involved, as well as to the company as a unit. Those listed above are eminently important to the transportation department, and their actual money value will be immediately apparent to pipe line and marine officials.

Petreco engineers will make an extensive survey of emulsion problems for any operating oil company; rendering a definite, dependable report of potential savings to each department separately.

PETROLEUM RECTIFYING COMPANY OF CALIFORNIA
General Offices: 530 West Sixth Street, Los Angeles, California
Branch Office: Houston, Texas. Branches and Service Men in Principal Oil Fields.

IMPORTANT SAVINGS
From The Well Through The Refinery

PETRECO

have doubled the drilling cost. Yet, it is extremely doubtful whether the field would have been given twice the allowable it has enjoyed had the double number of wells been drilled. There will be no way to determine whether an increased drilling program would have given a greater recovery, however, this is also doubtful.

To January 1, 1937, there have been 3000 acres developed by the 139 oil wells completed. Drilling has proven up an additional 2550 acres. It might be assumed that 128 more wells could be completed in present limits of the field considering the 20-acre spacing rule, putting the ultimate number of oil producers at Anahuac at 283. There have been 155 oil wells, gas wells and failures completed, making the average well spacing for the completed wells run about one well to 19 acres and the average well spacing for oil wells around one well to 21½ acres. The average recovery for the 20-acre units drilled is approximately 983 barrels per acre, and the average recovery of the proven acreage (5550 acres) runs about 531 barrels per acre.

To define the writer's terms "proven acreage" and "producing acreage" as seen in different tables accompanying this article, the producing acreage is taken from the number of oil wells completed on 20-acre units drilled and it was estimated that around 3000 acres were productive at January 1, 1937. The term proven acreage is defined as those areas as shown by completed wells, supplemented by definite geological data, to be such that other wells drilled thereon are certain to be commercial producers. Furthermore, lands where geologic inferences and well data as to structure and continuity of sand, make very favorable the chances of commercial production. It has been assumed that there will be approximately 2550 more productive acres at Anahuac, giving the field a total area of 5550 producing acres.

The estimated ultimate recovery per proven acre is approximately 46,306 barrels, and the estimated ultimate recovery per acre-foot is around 770 barrels. The average thickness of oil sand over the entire field runs from 60 to 80 feet, while the average thickness of gas sand is from 80 to 100 feet.

Operations by Companies

January 1, 1937 it was estimated that Humble Oil & Refining Company controlled 86.30 percent of the proven acreage at Anahuac, while Sun Oil Company had around 9.19 percent and Gulf Oil Corporation 4.51 percent. The total proven acreage for Humble Oil & Refining Company was estimated at 4790 acres, Sun Oil Company, 510 acres, and Gulf Oil Corporation 250 acres. Humble Oil & Refining Company had developed 2390 acres, or 79.67 percent of the total producing area. Sun Oil Company had proven up 510 acres or 17 percent of the total proven acreage, and Gulf Oil Corporation had a total of 100 acres of producing acreage, or 3.33 percent. In estimating the additional proven acreage, Humble Oil & Refining Company has approximately 2400 acres, and Gulf Oil Corporation 150 acres, that is, considering the 20-acre spacing units. Humble Oil & Refining Company has 94.11 percent of the remaining estimated proven acreage and Gulf Oil Corporation has 5.89 percent. Sun Oil Company evidently has drilled up its 510 acres. Of course, these figures will be changed if extensions are completed or a revision in well spacing is made.

Cumulative production of Anahuac up to January 1, 1937, was 2,947,500 barrels. Humble Oil & Refining Company has produced 81.9 percent of the oil, or 2,416,000 barrels. Sun Oil Company has produced 16.7 percent of the production, or 490,000 barrels and Gulf Oil Corporation has produced 41,500 barrels or 1.4 percent of the total production. Humble Oil & Refining Company has recovered about 504 barrels per proven acre, Sun Oil Company has recovered around 960 barrels per proven acre and Gulf Oil Corporation has produced approximately 166 barrels per proven acre. (See Table 9).

TABLE 9
Analysis of Production by Companies Operating at Anahuac field, January 1, 1937
(In barrels)

COMPANY	Cumulative Production	Percentage of Total	No. of Proven Acres	Recovery per Acre
Humble Oil & Refining Co.	2,416,000	81.9	4790	504
Sun Oil Co	490,000	16.7	510	960
Gulf Oil Corp.	41,500	1.4	250	166
Totals	2,947,500	100.0	5550	1630

The estimated ultimate recovery of Anahuac is placed at 257,000,000 barrels of oil. The field had produced 2,947,500 barrels up to January 1, leaving an estimated reserve of 254,052,500 barrels. Humble Oil & Refining Company has an estimated 87 percent of the reserves, or 223,584,000 barrels, in storage under the ground. Sun Oil Company has an estimated 28,510,000 barrels in reserve, or 12 percent of the total reserves, and Gulf Oil Corporation has 1 percent of the total reserves, or 1,958,500 barrels. The estimated ultimate recovery per acre for Humble Oil & Refining Company's proven acreage is 47,181 barrels, and the company has produced approximately 504 barrels per acre, which leaves a total reserve of 46,677 barrels per acre. Sun Oil Company having produced 960 barrels per acre, has a calculated reserve of 55,902 barrels per acre. Gulf Oil Corporation has an estimated ultimate recovery per acre of 8000 barrels and has produced 166 barrels per acre, leaving a reserve of 7834 barrels per acre. (See Table 8).

Of the total of 155 wells completed at Anahuac, Humble Oil & Refining Company has completed 81.29 percent, Sun Oil Company 15.49 percent, and Gulf Oil Corporation 3.22 percent. Humble Oil & Refining Company has completed 80.9 percent of the oil wells, 50 percent of the gas wells and 90.9 percent of the failures. Sun Oil Company has completed 16.9 percent of the oil wells, and no failures or gas wells. Gulf Oil Corporation has completed 2.2 percent of the oil wells, 50 percent of the gas, and 9.1 percent of the failures. Humble Oil & Refining Company has completed 115 oil wells, 1 gas well, and 10 failures. Sun Oil Company has completed 24 oil

TABLE 10
Analysis of Wells Completed by Companies Operating at Anahuac field, January 1, 1937

COMPANY	Completions			Total Completions	Percentage of Total	Percentage of Total (Field)		
	Oil	Gas	Failures			Oil	Gas	Failures
Humble Oil & Refining Co.	115	1	10	126	81.29	80.9	50	90.90
Sun Oil Co	24	0	0	24	15.49	16.9	0	0
Gulf Oil Corp.	3	1	1	5	3.22	2.2	50	9.10
Totals	142	2	11	155	100.00	100.0	100	100.00

SOUTH TEXAS GEOPHYSICAL CORP.

SEISMOGRAPH EXPLORATION

Phones:
Fairfax 3321 ◆ Long Distance 49

20TH. FLOOR STERLING BUILDING ◆ HOUSTON, TEXAS

Major portion of Anahuac oil production is handled by Humble Pipe Line Company. This is a view of that company's main storage point and pump station in the field.

TABLE 11

Log Record of a Typical Anahuac Well

Footage	Remarks
0– 43	Surface clay.
43– 287	Clay and sand.
287– 486	Shale.
486– 606	Shale and boulders.
606– 987	Shale and streaks of sand.
987–1430	Sand, shale and boulders.
1430–1480	Tough shale and boulders.
1480–1607	Sandy shale.
1607–1721	Shale.
1721–1782	Sand and boulders.
1782–1870	Shale.
1870–2108	Sandy shale and boulders.
2108–2413	Shale, streaks of sand.
2413–2528	Sandy shale and boulders.
2528–2887	Shale, streaks of sand and boulders.
2887–3120	Shale and lime.
3120–3222	Shale.
3222–3280	Sand.
3280–3445	Shale, streaks of sand.
3445–3574	Sand.
3574–3615	Shale.
3615–3680	Sand.
3680–3722	Shale, streaks of hard sand.
3722–3741	Shale and boulders.
3741–3790	Sand.
3790–3793	Hard sand.
2793–4062	Shale.
4062–4110	Sand.
4110–4176	Shale.
4176–4206	Shale.
4206–4280	Hard lime and shale.
4280–4509	Hard shale and streaks of lime.
4509–4526	Sand, streaks of hard sand.
4526–4548	Shale.
4548–4876	Shale, streaks of hard lime.
4876–4908	Hard lime.
4908–4942	Shale.
4942–5040	Sandy shale.
5040–5046	Lime.
5046–5200	Shale.
5200–5426	Shale, streaks of hard lime.
5426–5454	Shale.
5454–5467	Hard shale, streaks of hard lime.
5467–5468	Hard lime.
5468–5485	Shale, streaks of lime.
5485–5573	Hard shale, lime streaks.
5573–5586	Hard lime.
5586–5605	Shale, lime streaks.
5605–5720	Shale, streaks of hard lime and sand.
5720–6006	Shale (discorbis is found).
6006–6075	Shale, lime streaks. (Heterostegina is found.)
6075–6078	Lime.
6078–6082	Shale.
6082–6085	Lime.
6085–6146	Hard lime.
6146–6316	Hard shale, streaks of hard lime.
6316–6416	Shale. (Marginulina formation is found.)
6416–6490	Hard shale, streaks of lime.
6490–6534	Shale.
6534–6568	Sandy shale.
6568–6613	Sand.
6613–6723	Shale.
6723–6757	Hard sand.
6757–6799	Sand, showing gas.
6799–6868	Shale, streaks of lime.
6868–6876	Shale.
6876–6891	Sand showing gas.
6891–6970	Shale, streaks of sand.
6970–6984	Sand showing gas.
6984–6986	Sticky shale.
6986–7020	Sand showing oil.
7020–7060	Sand, hard streaks showing oil.
7060–7075	Sand and shale.
7075–7089	Sand showing oil.

wells, and Gulf Oil Corporation has completed 3 oil wells, 1 failure and 1 gas well. (See Table 10.)

Pipe Line Outlets

Anahuac is served by two pipe lines. Humble Pipe Line Company runs the major part of the oil through a 6-inch line. Gulf Pipe Line Company has a 4-inch running from the northern part of the field approximately 11 miles north to the Hankamer field, and operates a small pumping station on the W. T. Knowles lease.

Humble Oil & Refining Company has constructed storage tanks in the center of leases, and when wells are completed they are turned into the storage tanks through two gas-oil separators. Some leases have as many as 19 wells flowing into the battery of tanks. The two 500 or 1000-barrel tanks and one 750-gun-barrel tank are located near roads where they are easy to get to. On the main gathering system there are two 55,000 and one 19,000-barrel storage tanks. These tanks are approximately 1000 feet north of the discovery well on the south side of the field. From them oil is pumped through a 6-inch line to Moss Bluff and from there to Humble Oil & Refining Company's refinery at Baytown.

A high-pressure pump station is installed at the tank farm. It consists of a 220-horsepower oil engine and a 5¼x24-inch high-pressure pump. The oil is gathered from the field by a 25-horsepower oil engine and a 9x18-inch low-pressure suction pump.

On the north side of the field, Sun Oil Company runs oil through a 4-inch line from battery of tanks to Humble Pipe Line Company'st storage tanks, and the oil then is routed to Moss Bluff, where it is turned into Sun Pipe Line Company's line and is then carried to Beaumont.

Humble Pipe Line Company also has a 55,000-barrel tank on the north side of the field on the R. M. White lease. Oil is gathered from the 976-acre White lease and is pumped by a gasoline engine to the main tank farm on the south side of the field.

HEAVY SLURRIES HELP

PRETTY good proof of easier pumpability, when 500 sacks of cement, in slurries up to 17 lbs., are run into place in 20 minutes. That is what 'Incor' accomplished on Hiawatha Oil Company's Smith No. 6, Saxet Field. Cement weights averaged 16 lbs. for nine readings—high 17 lbs., low 15 lbs. Pumping down started at 1:35 A.M., stopped 1:55 A.M.

Same kind of service 'Incor' has been giving ever since it was introduced, 10 years ago. For 'Incor' is specially processed to provide easy pumpability in heavy slurries—readily pumpable at 45 per cent. That means a gel-like mix that resists mud contamination and gives you a stronger, denser, long-life shut off. No need to thin down the cement and run the risk of a weak, porous job.

Controlled Setting Time

And 'Incor' is timed to set slowly, allowing a margin of safety in case of delays. Once in place, it hardens rapidly, protecting against gas agitation or ground-water seepage, and permitting earlier drill out.

'Starcor' also has these needed special properties, only it is 'timed' for use in deep, hot holes, and is specially processed to provide extra resistance against sulphate-water action.

Use 'Incor'* or 'Starcor'* next time, depending on the kind of job. These two oil men's cements are made and sold by Lone Star Cement Corporation, Dallas—Houston. *Reg. U. S. Pat. Off.

TWO PORTLAND CEMENTS—BOTH MADE FOR OIL WELLS

Properties	'Incor'	'Starcor'
Greater pumpability	Free pumping at 15 to 16 lbs.	
Gel-like body	Reduces mud contamination; doesn't settle out	
Controlled setting time	Normal UNDER 140°	Normal OVER 140°
High early strength	Drill out 1 to 2 days	Drill out 2 to 3 days
Sulphate-water resistance	Good	Exceptional sulphate resistance

LONE STAR CEMENT CORPORATION

Makers of LONE STAR CEMENT • 'INCOR' 24-HOUR CEMENT • 'STARCOR' CEMENT

One battery of tanks on this lease has 19 wells flowing into it.

Lease Layout and Camps

Anahuac is one of the more modern oil fields located along the Gulf Coast. Operations are accessible during bad weather. After the discovery well was completed, Humble Oil & Refining Company started laying out the field for an orderly development campaign. Shell roads were constructed around sections, through the center, and some sections were cut up into quarters. Wells were drilled near the roads, and wooden runways were constructed to the locations from hard-surfaced roads.

Humble Oil & Refining Company has constructed a main road approximately 3 miles long from the entrance to Anahuac to the southern tip of the field. From this road all roads lead to different parts of the field. The roads are of shell, from 6 to 8 inches deep and about 12 feet wide.

Paralleling the roads, a 2½-inch gas line is laid to furnish gas for the drilling wells and camps. Each road has two drainage ditches from 3 to 6 feet deep paralleling it, and at intersection of roads there are 42-inch culverts to pass the water on to a main drainage ditch. The main drainage ditch runs approximately 10 miles through the field to Turtle Bay. The main ditch is 4 to 5 feet deep and at the end where it runs into Turtle Bay it is approximately 9 feet deep. When it rains at Anahuac, the leases are quickly drained.

Landscaping in an area where natural vegetation is the coarse grass of the level coastal prairie is a feature of comforts provided for workers at Anahuac. Above is the field office and on the opposite page a section of cottages in which field workers live. Below is another view of the camp.

When the field is entered, at the right is the company's production office where the division superintendent, petroleum engineers, civil engineers, drafting, machine shop, repair garage and other offices are located. The site is fenced in and flowers have been planted around the office.

After leaving the production office the employes' homes are noticed. The portable homes with concrete sidewalks are constructed by the employes. Humble Oil & Refining Company furnishes the lot and improvements. There are approximately 250 employes and 170 families located in the camp. A hospital and first-aid station with a nurse is maintained at all times. There is also a large recreation hall in the center of the camp site and next to it is a lighted tennis court for the employes. One cafe is located inside the camp site for those who do not eat at home.

Homes are supplied water through lines laid from the canal. This is filtered by the company's filtration plant. Gas is furnished from the field and is taken from the same central system that supplies the drilling rigs. Employes pay a small service charge for gas that is consumed in the homes. Each house faces a shell road. Between the house the water and gas

lines run in a main system. Each shell street is named and lighted by gas lamps which burn day and night. Facing the main group of homes is a large park where playground equipment is installed for the children. There is a large artificial lake filled with fish. Trees have been planted around the park and the lawn is carefully kept.

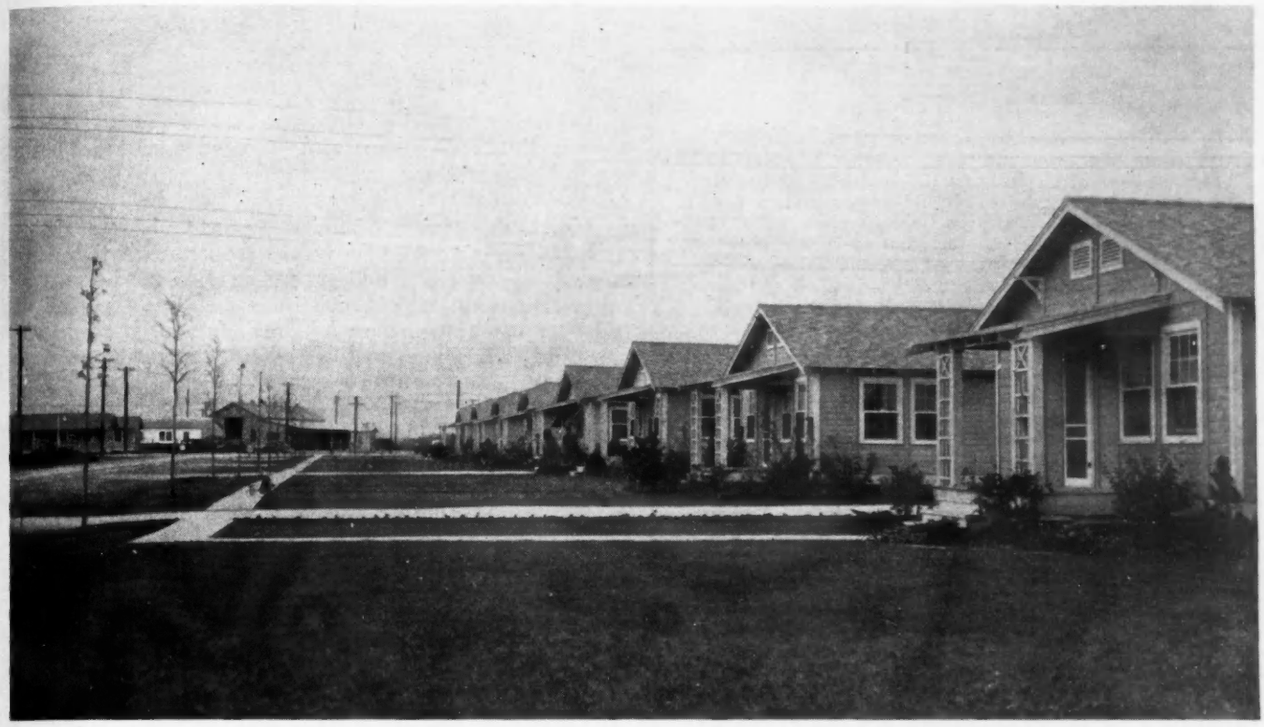
Employes have their own safety chairman, and a record is kept of each accident during the year. All modern safety programs are carried out, and it is remarkable that there has been no major accident or fire since the field was discovered.

Across from the park is a modern airport with

TABLE 12

Analysis of Anahuac Crude

	Sample No. 1	Sample No. 2	Sample No. 3
Gravity	35.6°	34.3°	33.7°
Paraffin	2.58%	3.00%	1.65%
Sulphur	0.13%	0.14%	0.15%
Gasoline (Init. 410°)	25.70%	21.72%	22.92%
Gas Oil (410°–530°)	20.30%	23.32%	20.22%
Heavy Gas Oil (530°–60%)	13.95%	14.97%	16.87%
Bottoms	39.65%	39.69%	39.49%
Loss	0.40%	0.30%	0.50%
Totals	100.00%	100.00%	100.00%



200x2000-foot runways. Officials from Houston can fly to the field in half an hour and land planes with safety.

Conclusion

Anahuac approaches the ideal in the simplicity of its production problems. Few other known Gulf Coast fields have its enormous free gas reservoir, where the gas in its free state can be maintained practically intact as a source of steady and enormous pressure during the oil producing life of the field.

Drilling on the northwest side of Anahuac will no doubt show closures on the north and west and should be against the normal south and east regional dips. Closures should follow the topographic high on the north and west, as it has done on the east, south, southeast and southwest.

Deeper pays at Anahuac are possible and even probable, but will be proven only when deeper sands are penetrated on structure. Thus far all wells drilled beyond the Frio productive horizon have been off structure. Undoubtedly future exploration on structure will penetrate the known sands from the Frio to the Cockfield and Saline Bayou with an excellent chance of commercial saturation and recovery.

For accessibility, transportation facilities, water, fuel, and mechanical supplies, Anahuac is unsurpassed by any in the world. Any volume of production can be handled by constructing short lines to tidewater. Unlimited and economical water is immediately available. Fuel oil or gas is available in the field at reasonable rates. Good roads lead to the field and require two hours driving from Houston and one hour from Beaumont.

Pipe Plant Reclamation

By K. C. HAYES
Standard Oil Company of California

THIS paper covers the subject of reclamation of pipe and other oil field tubular products, as carried out in regularly established plants, but differentiated from the somewhat better known practice of reconditioning pipe lines in place. The object of each method of reclamation is the same—to restore the usefulness of the material and to prolong the life. The plant method of reconditioning has proven to be very efficient and the information given here is abstracted from practices now in use in plant operations.

Severe corrosive conditions in existent pipe lines and the age of the material led the company, almost 10 years ago, to concentrate to a greater degree on the plant method and to lessen the amount of reconditioning work done in place. Several rough semi-portable installations were made that were capable of handling a considerable quantity of pipe during the reconditioning season, and finally a fixed plant was established, so located that pipe could be moved economically from any point in the system. Later, changes in pipe lines resulting in a decrease in oil conveyed in the original system, made available large amounts of pipe and thereby emphasized the necessity of the plant method of reclamation in order to restore the full usefulness of this material. This additional available pipe made it necessary to enlarge the plant facilities and finally relocate in more suitable locations to correspond with changing activities.

Since the start of the plant method of reclamation, the total amount of pipe thus reconditioned has probably reached a total of 1,000 miles.

This paper was delivered at the Spring Meeting of the Pacific Coast District American Petroleum Institute Division of Production at Los Angeles, California, April 13, 1937. The statements and opinions expressed therein are those of the author, and should not be construed as an official action or opinion of the Institute, nor of this publication.

IN THE oil industry pipe is the very life blood of our operations. This being a well-established fact, it is natural to assume that simple and efficient methods of reclaiming pipe would result in enormous savings. From time to time in the past, quantities of used pipe had been periodically accumulated, necessitating disposal of some sort. The pipe often presented a very poor appearance, was very dirty, crooked, and rarely fit for use in the existing condition, and had no apparent utility value to an oil company. The culling out process, in an attempt to secure usable pipe without reclaiming, was very difficult and often hazardous, resulting in sales at very low figures to scrap dealers. Development of these culling-out processes and repair methods has resulted in reducing the scrap sales to a very small percent of the through-put.

Reclamation of pipe can be covered in four different operations:

1. Abandonment of present use.
2. Receiving and storing of used pipe previous to reclamation.
3. Actual reclamation of used pipe.
4. Disbursement of finished product.

In large oil field and refinery operations there are various types, sizes, and grades of pipe used—such as oil well casing, tubing, drill pipe and line pipe, all of which must be considered in reclamation. Casing, tubing, and drill pipe are reclaimed and returned to service as such, if the conditions warrant; if not, they are converted into line pipe.

To go back to the four different operations involved in reclamation, each one of which ties in with the others.

Abandonment of Present Use

In a minor way this is a continuous procedure. Large, lengthy lines to be abandoned are of major importance. In considering the economics involved in the abandonment of a pipe line, full consideration is given to the job on hand, and future needs for pipe, before jobs are authorized. This first phase—abandonment of present use—represents the source of supply of what we might call our raw materials for the pipe reclaiming plants.

Receiving and Storing of Used Pipe Previous to Reclamation

Within this operation comes the rendering of credit to the owning department for turning in this material. This is of particular importance as it is a direct credit to their operating costs and makes it attractive for the operators to send in pipe which they are not using and for which they can see no immediate future use in its existing condition.

The storing of this used pipe presents a problem within itself. It must be properly placed so that reclamation operations can proceed with a minimum of handling and at the time actual reclamation starts it will flow in as nearly a direct line through the plant as can be arranged.

Actual Reclamation of Used Pipe

At the present time the company has in operation two pipe reclamation plants. One handles the tubular products in sizes from 2- to 12-inch, line pipe, drill pipe, casing, and tubing, as removed from lines or wells, with conditions varying from straight, clean products to badly corroded, crooked, oil covered and dirty material. The methods followed are, briefly, as follows:

Two distinct lines of production are maintained, as pipe is divided into two general classes: (1) pipe 6-inch

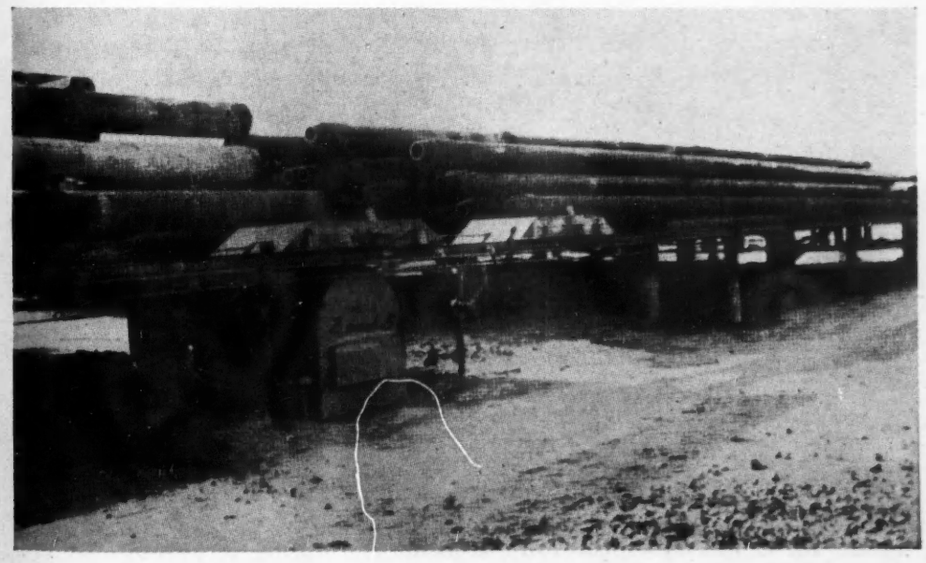
Incoming pipe storage racks—rows 1 and 2. Power driven conveyor carrying two joints of six-inch line pipe.

and larger in diameter, and (2) pipe smaller than 6-inch in diameter. Larger sizes of pipe of the first class are torch heated internally to remove oil residues and any protective coating remaining, this coating being removed by heating slightly. From this heating rack the pipe is moved by a roller conveyor and carried through a furnace. If necessary, pipe may be first moved from the storage racks to the straightener to put it in proper condition to facilitate movement through the rollers. Two lines of pipe can be handled on the conveyor at one time. The detail of construction is a simple conveyor system, and need not be specifically described. The furnace is of an enclosed type, 20 feet in length through which the pipe travels over movable high pressure burners. The speed at which the pipe travels through the furnace is governed automatically and is calculated so that the pipe passes through in the time required to perform the burning satisfactorily. A temperature of approximately 1300° F. is maintained. After burning, the pipe is transferred to a blast rack, then through the blaster, where all rust and other products of corrosion are removed. The blasting operation, using No. 40 steel grit instead of sand, exposes all external pitholes and defects. This grit is forced through two 3/8-inch nozzles with an air pressure of 100 pounds. The pipe is then roughly graded as to the amount and extent of corroded areas and beveled for welding.

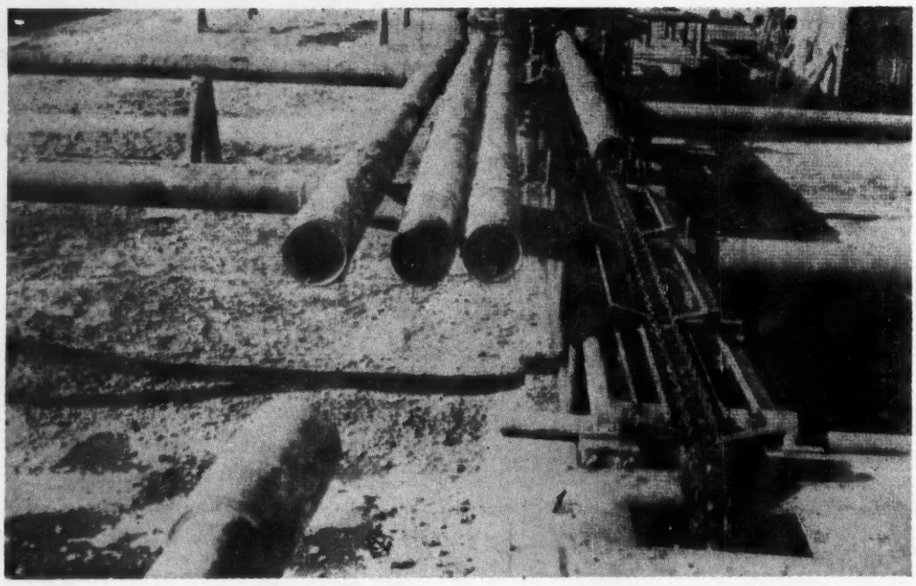
Beveling for Welding

The beveling is accomplished by medium of a removable hinged head which is clamped to the pipe; a guide with cutting torch attached is rotated on the head, the guide having a machined "V" groove which fits a "V" track on the beveling head. From the beveling rack the pipe is moved into the welding shed where the joints are lined up straight and tack-welded in 40-foot lengths. Rotating machines then revolve the pipe at proper speed and three successive beads of electric welds are applied. The pipe is then moved into a spot-welding shed where all external pits are built up with an electric weld rod to bring the wall thickness up to the grade for which the pipe is intended. After spotting the pipe is straightened and moved to the grading rack. Grading of the finished pipe is one of the most important functions of the entire operation. A very definite procedure has been outlined—grading into four different classifications predicated on condition and wall thickness.

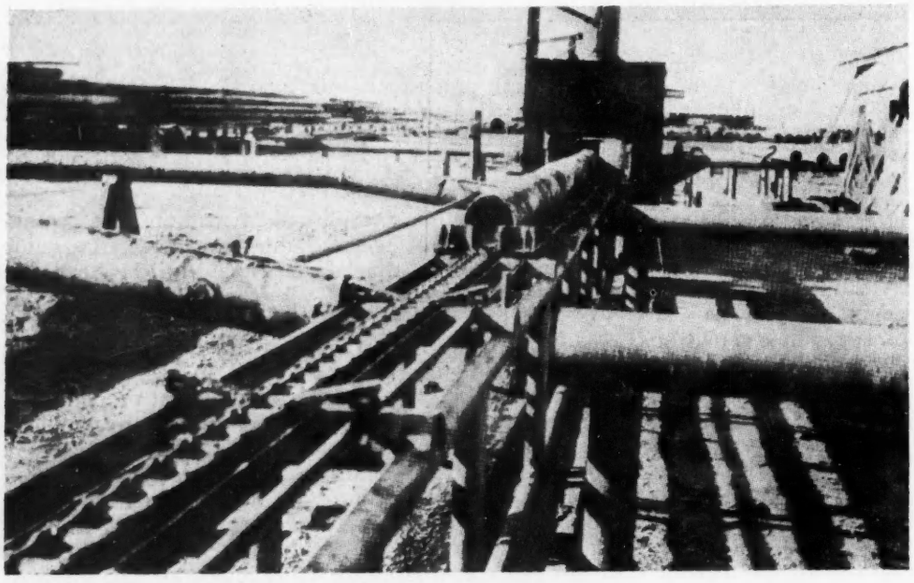
Grade 1—Equal, when reconditioned, to new standard



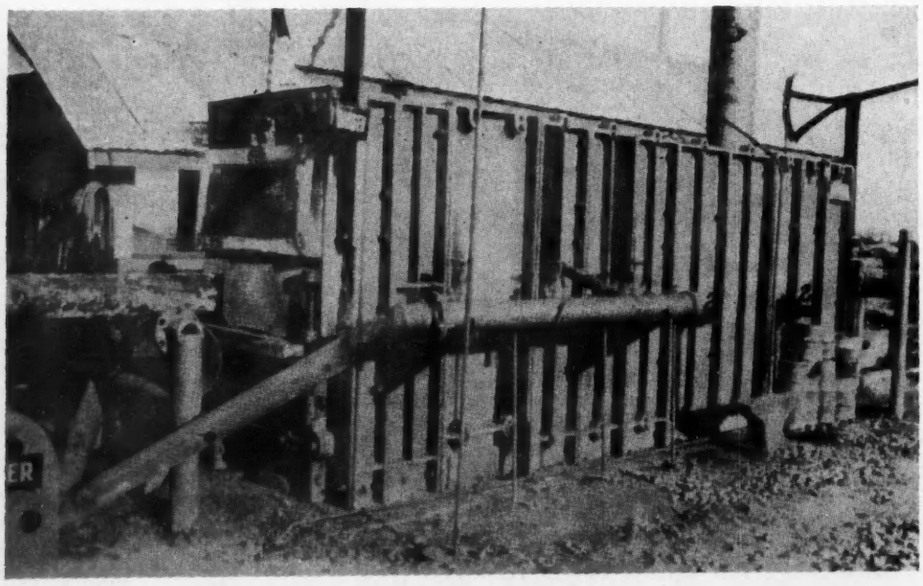
Conveyor (1).
Air motor drive (2).
Transmission (3).
Conveyor control rod (4).



Housing for electric drive of chain conveyor (1). Pipe alignment gates to furnace (2).



Automatic pipe release blocks (1). Cooling rack in background (2).



Fuel feed manifold (1). Bearings for furnace pipe roller conveyor (2).

weight line pipe of full standard weight and thickness, or more, and free from defects of any kind, with no spot-welded areas.

Grade 2 — Suitable for high-pressure duty when reconditioned, that is, of same working pressures as of new pipe of same weight and class, with a minimum of 75 percent of wall thickness of new pipe. Must be free from internal pits of measurable depth but may contain some external spots if not in excess of 25 percent of new wall thickness. Deeper segregated pits are allowable if spot welded to bring up to full wall thickness.

Grade 3 — Suitable for working pressures not exceeding two thirds of those for new pipe of same weight and class, with a minimum of 50 percent of new pipe wall thickness. Free from internal pits, but may contain external corroded spots if not in excess of 50 percent of original wall. Deeper pits allowable if spot welded to full wall thickness.

Grade 4 — Suitable for working pressures of approximately one half of that of new, containing pipe culled out from the other classes. Better than scrap, as this grade is still of utility for some services.

Reclaiming Smaller Pipe

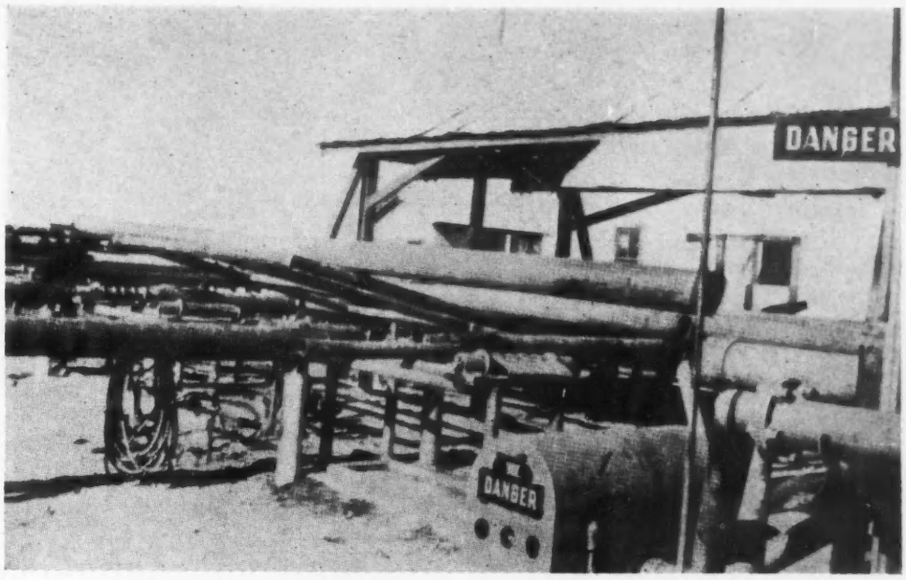
The reclamation of pipe of the smaller diameters is practically the same with these exceptions. The pipe is conveyed through a furnace equipped with gas burners that heat it externally to approximately 1300° F. After cooling, it is straightened and run

through threading machines where it is threaded and couplings are replaced if necessary to conform with A.P.I. specifications. The grading process is the same.

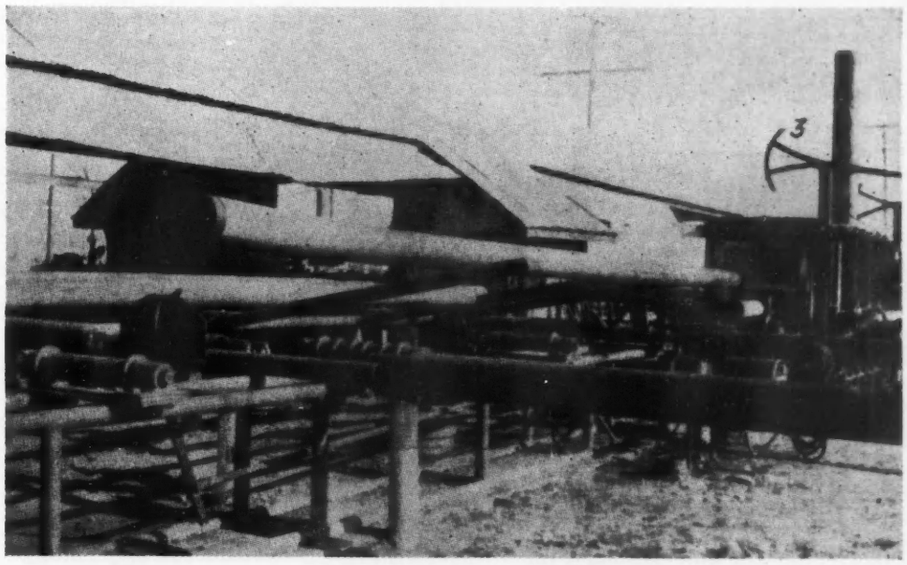
During the entire process of reclamation an endeavor is made to handle pipe mostly 10 feet and over in length. Pieces shorter than 10 feet are generally taken into the Scrap Account, sometimes being welded into full 40-foot lengths or set aside for use as bracing, etc. This keeps waste to a minimum.

The foregoing gives a general idea of this function. There are various other conditions that arise which must be taken into consideration—for instance, carbon content of the pipe, particularly in converting drill pipe and casing into line pipe. At first considerable difficulty was experienced in making welds of pipe with a high carbon content. It was ultimately found that by annealing and welding, allowing to cool, and re-annealing the welds and portions of the pipe adjacent to the welds, very satisfactory results were obtained and pressures as high as 1200 pounds per square inch are now being maintained in pipe thus processed.

The other plant was designed to recondition 8-, 10-, and 12-inch pipe which was removed from old lines and reinstalled in new systems. Operations at this plant are quite similar to those of the first, with the same methods of cleaning, welding, and straightening. Several operations differ, such as beveling ends, where the pipe is cut by regular stationary pipe

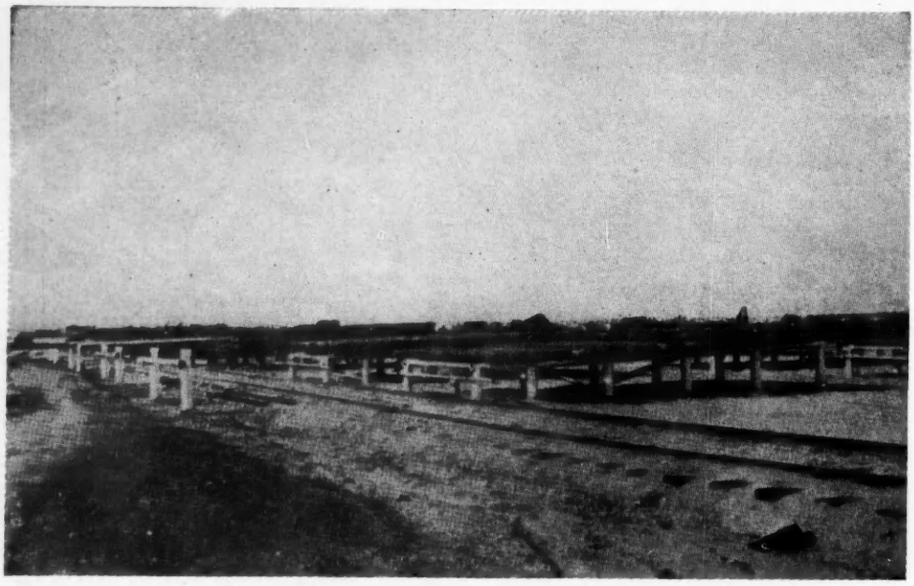


Housing for furnace blower (1). Air lift for hot pipe in action.

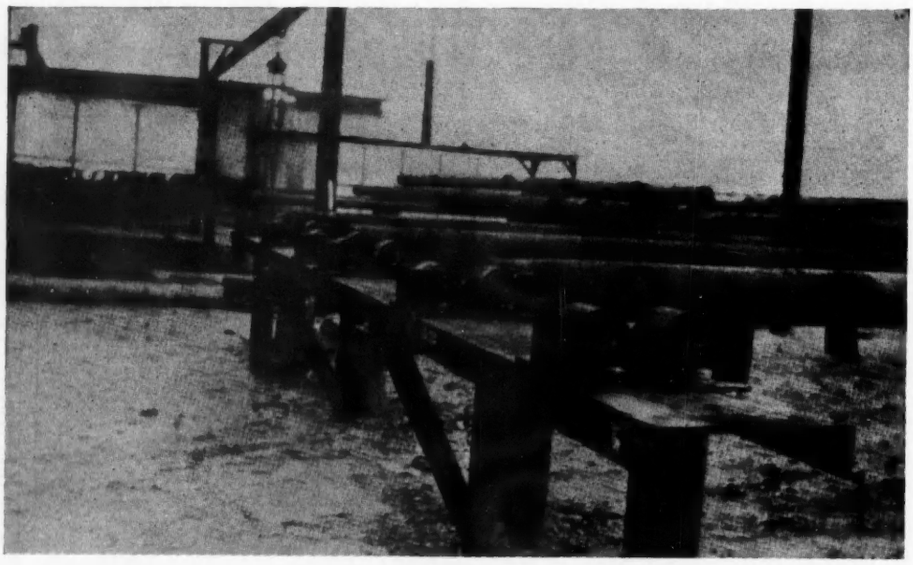


Automatic trip for air lift (1). Air lift in action. Pipe alignment gates at furnace exit (2). Hoist for furnace door (3).

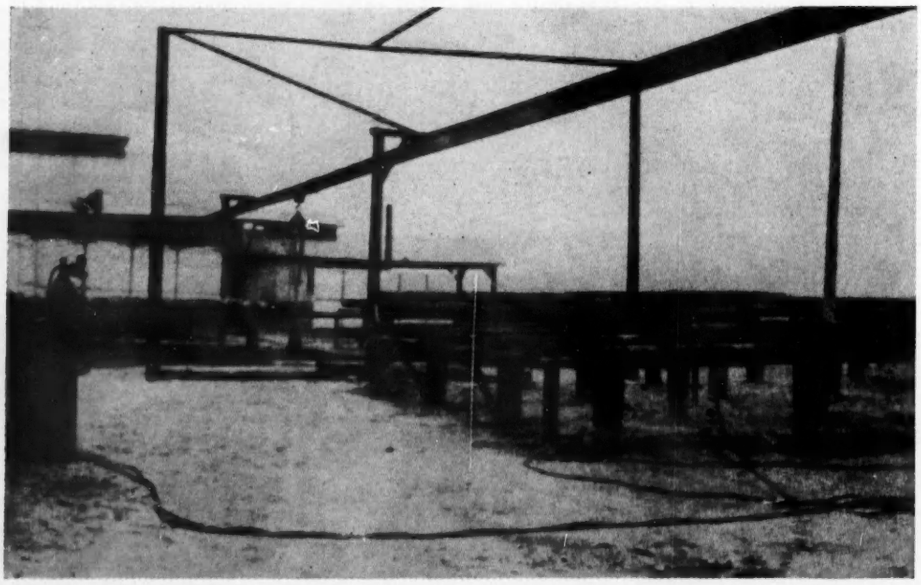
Sorting Conveyor.



Storage racks for finished pipe.



Rollers at end of welding rack for rolling pipe as it is welded or spotted.



Spot welding and short-nipple rack. Overhead crane and extension.

threading machines with cutting dies. A Somastic Coating Plant, under company process patents, is also operating. This plant prepares pipe for use where corrosive soil conditions require specially treated pipe.

Disbursement of Finished Product

Naturally, in arousing the interest of operating departments in the use of reclaimed pipe, there are at least two things to consider. First, to have a product worthy and, second, to disburse it at a price below the cost of new. This, of course, may be called pure psychology, but it is true nevertheless that pride in the product and the effort and care with which this pipe is reclaimed and racked for disbursement to operations, is a selling point to the ultimate user.

As stated before, there are four different grades of reclaimed pipe. A prospective user, knowing the purpose for which the line is to be used, the pressures involved, soil corrosion possibilities, etc., can easily select a suitable grade for the existing requirement, it being understood that regardless of the grade of pipe supplied, if used pipe were not available it would be necessary to purchase new pipe. It will, therefore, be seen that the grading is, as stated above, a very important part of the reclamation function.

It necessarily follows that safe practices in the operation of this reclamation unit must be observed, as we might classify the reclamation of pipe and the handling of materials among the most hazardous occupations in the oil industry. A continuous study is made, in conjunction with safety engineers and with committees of the men actually doing the work, to improve safe practices, methods of handling, and other features, to not only expedite the work but to keep the accident hazard to the lowest minimum consistent with getting the work done.

MEN IN THE INDUSTRY'S NEWS

D. E. BUCHANAN NAMED CHAIRMAN OF AMERICAN DELEGATION TO SECOND WORLD PETROLEUM CONGRESS

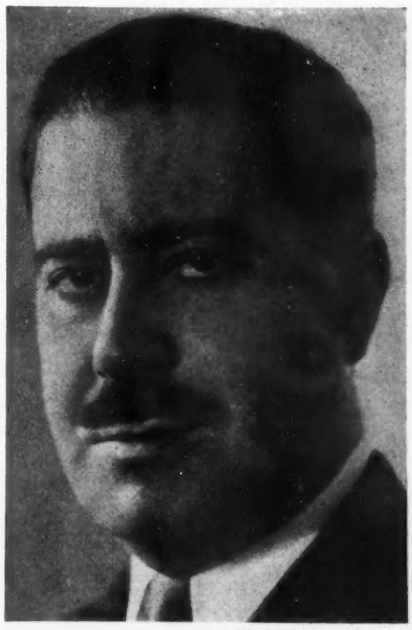
MEETING WILL BE HELD IN PARIS JUNE 14 TO 20 THIS YEAR

D. E. BUCHANAN of Hanlon & Buchanan, Inc., Tulsa, will be chairman of the American delegation to the Second World Petroleum Congress to be held at Paris June 14 to 20, next, it was announced April 12 by the State Department at Washington.

Making known that the United States has accepted the invitation of the French government to participate in the congress, the State Department named six other oil men to the official delegation, which will be as follows:

Herbert Baxley, Socony-Vacuum Oil Company, New York; William M. Brewster, managing director of "Raffineries de Petrole de la Gironde," Paris; W. D. Crampton, Standard Oil Company of New Jersey, Paris; H. A. Hassan, Sinclair Refining Company, Paris; Charles E. Lanning, Ph. D., member of the American Petroleum Institute, London, and Wallace E. Pratt, Humble Oil & Refining Company, Houston.

Also to be members of the delegation are Colonel James Gordon Steese, U. S. Army, retired, San Antonio; C. B. Veal, research manager, Society of Automotive Engineers, New York, and Charles W. Wright, vice consul at Vienna.



—Fernand De Gueldre

D. E. BUCHANAN

H. W. HOOTS, formerly assistant chief petroleum geologist for Union Oil Company of California, has resigned from the Union to accept the position of chief petroleum geologist of the newly organized Richfield Oil Corporation, with headquarters in Los Angeles. The appointment was made by Frank A. Morgan. manager of exploration for Richfield. Hoots has been in the geological department of the Union company for the past 10 years and prior to that time was with the United States geological survey.

LONNIE HUDDLESTON, scout for Shell Petroleum Corporation in West Central Texas for the past year, with headquarters at Cisco, and Joe Clingan, Wichita Falls district scout, have exchanged territories.

CHARLES L. SHERWOOD, scout for Mid-Continent Petroleum Corporation in West Texas, has resigned to become scout for George F. Getty, Incorporated, with headquarters at Midland. Sherwood has been succeeded by Myrl Mannschreck, who was formerly located at Shreveport, Louisiana.

H. D. DICKSON, Humble Oil & Refining Company construction superintendent in charge of the Tomball natural gas system, was transferred to West Texas division office to replace H. N. Stamper.

R. E. COLLOM, vice president of Continental Oil Company, has been re-elected president of Kettleman North Dome Association, and will be in direct charge of the association's drilling operations. H. H. Sargent will continue as manager of field operations. Under the new plan, there will be no direct successor to William Reinhardt, who resigned as general manager of the association to become associated with the oil division of Union Pacific Railroad.

R. W. SHERMAN has resigned as chief geologist for Barnsdall Oil Company in California, after being with the company for 10 years, and has opened an office at 114-6 Subway Terminal building, Los Angeles, to do consulting work. He is also affiliated with Rieber Laboratories as general representative for the state and is an expert on the operation of the Sonograph system, as he has used this system for the past two years in geophysical exploration work.

A. W. STRAUBE, A. W. Cole, Charles H. Goss, M. J. Van Voorhies, S. W. Wolbert, George M. Kirkwood, R. L. Sailer, A. S. Hagan, L. M. Baltzell, I. L. Klein, I. L. Peterson, W. L. Gettings, C. L. McCarthy, Charles M. Noyes, M. E. Kofford, W. R. Storey, H. W. Hubbell, Dr. G. O. Ebrey, D. J. Harvey, J. M. Hinman, Wes W. Dunlap, Ernest C. Miller, H. E. Shoemaker, D. E. Bechtel, E. S. Pearson, W. E. Warmer, L. R. Quirin, C. A. Barrere, F. J. Underwood, E. E. Bown, W. B. Chenault, R. P. Wilson and S. A. Young were among those attending the Western Pennsylvania manufacturers' group of National Petroleum Association meeting in Oil City, April 8.

E. A. SHOWERS, president of Showers & Moncrief, Inc., has been elected vice president of the Independent Petroleum Association of America for the Southeast Texas district. He fills a vacancy in that position.

MAURICE TEIS, chief geologist for E. H. Moore, Inc., in the Fitts field of Pontotoc County, was a visitor in the Tulsa office of the company last week.

JERRY MADDOX, geologist with the Carter Oil Company at Oklahoma City, is being transferred to the northern division at Ponca City, Oklahoma.

C. P. McGAHA, president, Fain-McGaha Oil Corporation, Wichita Falls, Texas, has been appointed chairman of a permanent sub-committee on unnecessary and excessive drilling of the Independent Petroleum Association of America. Other members of the committee are: Don R. Knowlton, Phillips Petroleum Company, Bartlesville, Oklahoma; M. E. Blaish, president, Malco Refineries, Inc., Artesia, New Mexico; Edwin B. Hopkins, vice president and general manager of of American-Maracaibo Company, Dallas; R. E. Hardwicke, Hardwicke, Brelsford & Cheek, Fort Worth; Villard Martin, attorney, Tulsa; A. S. Ritchie, president, McPherson Drilling Company, Wichita, Kansas; J. R. Pemberton, oil umpire, Los Angeles; and W. P. Z. German, attorney, Skelly Oil Company, Tulsa.

J. H. EDDY is president of the newly formed Great American Oil Company of San Antonio. The company plans immediately to begin development of its Cedar Creek field properties in Bastrop County. Era A. Ball and E. J. Braswell also are in the new concern.

FERGUS S. DAVIS, scout for Atlantic Refining Company, has been elected Bull Scout for the Corpus Christi district.

DAN C. NUFER and G. S. Dille have organized a firm of geological consultants with offices in Atlas Life building, Tulsa. Nufer recently resigned as chief geologist of Carter Oil Company, a post held for the past three years. Dille has been engaged in consulting work during the past year and previous to that was in the geological department of The Texas Company.

STANLEY A. THOMPSON, president of Westbrook-Thompson Holding Corporation and co-discoverer of Hendrick field, West Texas, was guest of honor at the annual Golden Deeds Banquet given April 10 by the Exchange Club of Fort Worth. Honorary title of being the outstanding citizen was bestowed upon Thompson for his civic activities since becoming a resident of Fort Worth in

1925. Thompson is a native of Madoc, Ontario. After graduating from Albert College he engaged in mining activities in Vancouver. He drilled exploratory oil tests in British Columbia prior to his removal to Fort Worth, where he entered into partnership with Roy W. Westbrook and W. L. Stewart to drill the Hendrick field discovery producer.

O. D. DONNELL, president of Ohio Oil Company, with headquarters at Findlay, Ohio, arrived in Los Angeles April 13 for a few days visit in Southern California. While he is in California he will confer with local company officials.

L. G. HUEY, scout for Magnolia Petroleum Company in East Texas, has been moved from Tyler to Shreveport, Louisiana, to relieve W. B. Jackson, scout who has been promoted to lease buyer. C. A. Pounds, Tyler land department, will succeed Huey as East Texas scout.

JOE HEMPHILL, South Louisiana scout for Magnolia Petroleum Company, has been transferred from Lake Charles to the company's new land and scouting district office headed by J. A. Selby at New Orleans, and will cover southeastern parishes in the state. Mike Chavonnie, land department employe, has been assigned to scouting the Lake Charles area.

ED. A. LANDRETH, president of Landreth Production Corporation, has announced the consolidation of the above concern and subsidiary units to become known as the Landreth Oil Corporation, with a capitalization of $4,000,000. Headquarters will remain in the Petroleum building, Fort Worth. The new corporation is preparing to launch an aggressive drilling program on its West Texas and Southeastern New Mexico leases, and is also to join Phillips Petroleum Company in erecting a large natural gasoline plant in Goldsmith field, Ector County, Texas.

LYNN L. HARDEN, geologist and scout for Sinclair Prairie Oil Company, Corpus Christi, has been transferred to Eastland to become district geologist. Adrian Heaton, of Carthage, Missouri, replaces Harden in the Corpus Christi office.

G. H. TRUEBLOOD has been transferred from East Texas to the Corpus Christi office of Texas Railroad Commission tender board.

W. P. LAUGHTER, Refugio division of Texas Railroad Commission, has been transferred to San Antonio to be in charge of the two divisions for the commission.

ERIC A. RUDD, geologist formerly with Oil Search Limited in Australia, is now connected with Broken Hill Proprietary Company Limited, Melbourne, Victoria.

WINSTON P. HENRY, president of Putnam Oil Company, Houston, has been elected a member of the executive committee of the Independent Petroleum Association of America to fill a vacancy in the committee from South Texas.

W. PAT DUNCAN, assistant to chief scout for Magnolia Petroleum Company, Dallas, has been transferred to Roswell to scout New Mexico areas, succeeding W. K. Brewster, who has been removed to Decatur, Illinois. J. Morris Phillips will fill the Dallas vacancy.

A. M. SMITH, auditor of various subsidiaries of Gulf Oil Corporation at Houston, is in Mexico on a combined business and pleasure trip. Accompanied by M. C. Carlson, auditor of Mexican Gulf Oil Company at Tampico, he motored from Monterrey to Mexico City, where several days were spent. On the return trip, he will visit Tampico.

ALFRED BEST, executive department of Cia. Mexicana de Petroleo "El Aguila" S. A. at Tampico, Mexico, is spending a vacation in England.

E. V. HEWITT, Pan American Production Company, Louisiana, has been transferred to Houston, where he will be assistant drilling superintendent for the Gulf Coast.

H. N. STAMPER, Humble Oil & Refining Company division civil engineer of West Texas division, was transferred to Houston as assistant to S. W. Oberg and O. E. Young.

TOM HILL, scout with Sun Oil Company, has been transferred to Corpus Christi to cover the area immediately surrounding Corpus Christi.

MAURICE MELVILLE is head of the recently formed Six-Tex Oil Corporation of San Antonio. Others in the company include Mowry Smith and C. R. Smith.

T. N. DAVEY, who was connected with Atlantic Refining Company for a number of years, recently became associated with Buckingham Oil Company and has been made manager. His offices are in Corpus Christi.

W. S. S. RODGERS of New York, president of The Texas Company, accompanied by B. E. Hull of Houston, president of Texas Pipeline Company, recently made an inspection of some of the company's holdings in the Shreveport district. Accompanied by R. C. Stewart, Shreveport division head of the company, they visited the Rodessa field.

W. B. CALHOUN, Humble Oil & Refining Company, was transferred to the East Texas division office as division transportation foreman.

MISS ELSIE A. MILLER, manager of the West Coast office of the American Petroleum Institute, with offices at Los Angeles, spends about 10 hours a day and 6 days a week thinking about the oil business and oil statistics, but she takes time off, after hours, to serve as president of the Velada Club of Hollywood, an organization of young business women. The name of the organization means "good fellowship," and the club is in its sixteenth year. An annual installation dinner was held April 8, and at that time Miss Miller was installed for her second year as president. Mrs. Carolyn Weber, president of the California Federation of Business and Professional Women, was the installing officer. The club has adopted, in a manner, the girls at Hollywood High School. The club sponsors an annual vocational guidance program for these girls, and does considerable welfare work. A scholarship for a deserving girl student at Hollywood is also maintained. Miss Miller's popularity among the leading oil men of California is well known, and her unselfish interests in their interests is well appreciated.

CHARLES W. GRIMES, Tulsa independent operator, is receiving much complimentary criticism on his recently published book, "A Story Outline of Evolution."

E. B. McFARLIN has been named chairman, and H. M. Stalcup, vice chairman, of the oil activities department of the Tulsa chamber of commerce. Committee chairmen are: Charles W. Grimes, chairman, and Mark Patton, vice chairman, oil problems committee; D. E. Buchanan, chairman, and R. O. Dietler, vice chairman, International Petroleum Exposition committee; and C. O. Wilson, chairman, oil publicity committee.

SENATOR DAVID A. REED of Pennsylvania, legal counsel for Gulf Oil Corporation, Pittsburgh, was a visitor in Houston last week where he listened to the hearing before United States Commissioner Carothers on the question of whether O. H. Carlisle, Houston division manager of the same corporation, should be removed to Madison, Wisconsin, to face trial in connection with the alleged "oil conspiracy" case.

P. CHARRIN of Paris, France, who spent several months last year in the United States in connection with activities of the local affiliate of Societe de Prospection Electrique Procedes Schlumberger, expects to return to Houston this summer.

R. A. BARGER, Humble Oil & Refining Company assistant superintendent of Hurdle district, was promoted to district superintendent in charge of the Hurdle district.

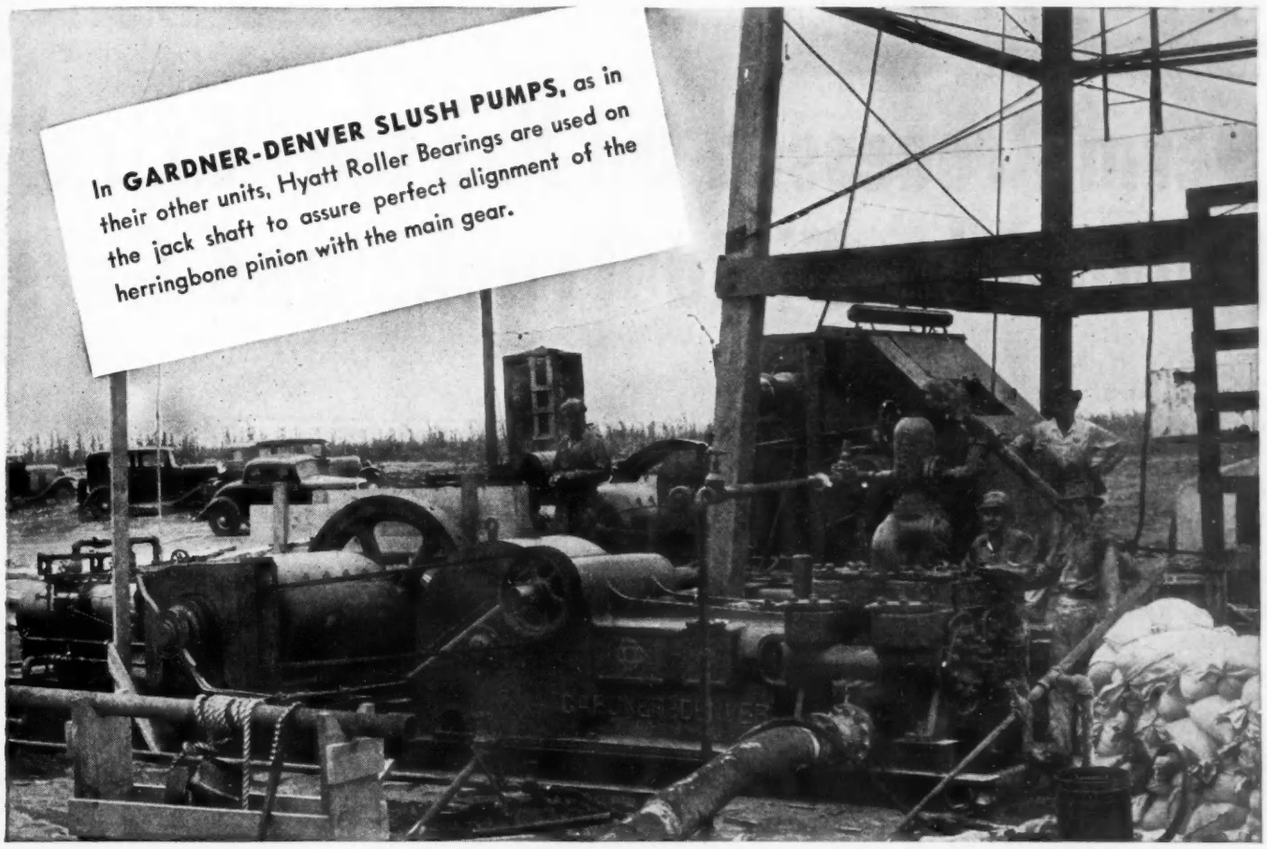
CLEM S. CLARKE, engineer and independent operator, of Shreveport, has been retained by Gulf Oil Corporation to supervise geophysical work upon its recently obtained 1,000,000-acre block in Florida. Clarke assembled the acreage and assigned it to the Gulf Company.

DIED:

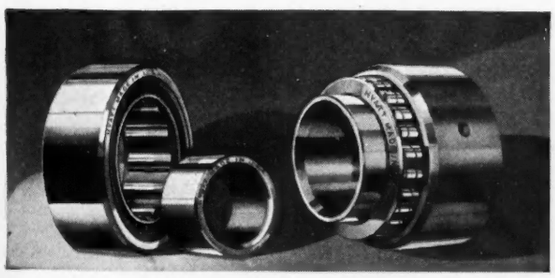
NORWOOD LYKES, 49, died April 9 at Texarkana, Texas. Lykes was well known in oil circles, having been actively engaged in the oil business for the last 25 years. During this time he was associated with Carter Oil Company in the Mid-Continent region, and was with Standard Oil Company of New Jersey in Argentina and North Africa. At one time he was head of the land department of Indian Territory Illuminating Oil Company, Bartlesville, Oklahoma. At the time of his death he was operating in Louisiana and Arkansas, and was making his home in Shreveport, where his widow and daughter still live.

S. TULIO ACUNA, in charge of the legal department of Cia. Mexicana de Petroleo "El Aguila," S. A., at Tampico, Mexico, was drowned April 7. He had left Tampico April 2 to spend a vacation at his ranch in the State of Tabasco. Upon arriving at Villahermosa, Tabasco, he boarded a launch, with a number of other persons, to cross Laguna del Carmen, one of the largest lakes in Mexico. The launch capsized and Attorney Acuna, and two small children, lost their lives. He was 43 years of age, unmarried, and is survived by his parents.

IT'S A TOUGH LIFE


In GARDNER-DENVER SLUSH PUMPS, as in their other units, Hyatt Roller Bearings are used on the jack shaft to assure perfect alignment of the herringbone pinion with the main gear.

...but they don't weaken!

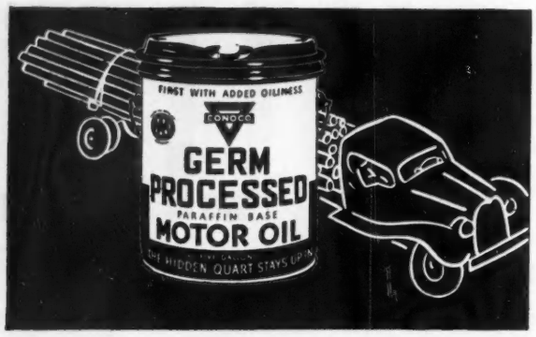


Under gruelling operating conditions today, excessive wear and stress is imposed, which would easily make ordinary bearings old before their time!

But Hyatt Bearings are designed to withstand these strains and shocks. And built by master craftsmen to a double standard of precision and long life—Hyatt capacity and performance give many added years of service to related parts.

That's why you will find so much operating equipment with Hyatt Roller Bearings built in. Hyatt Bearings Division, General Motors Corporation, Newark, Detroit, San Francisco. Hyatt Roller Bearing Sales Company, Chicago and Pittsburgh.

HYATT
ROLLER BEARINGS



Germ Processed Oil Has the "Extra" Needed by Field Trucks and Cars

Trucks and cars must resist their toughest punishment out in the field. No highway or city driving causes as much strain as boggy and sandy backroads . . . steep grades . . . emergency overloading. To keep costs low, you must use a motor oil that maintains safe lubrication under severest conditions. Conoco Germ Processed oil fully meets that specification. Patented Germ Processing gives it double and triple the load-carrying ability of regular mineral oils. Germ Processed oil clings to metal so tenaciously that it actually *Oil-Plates* every surface. This *Oil-Plating* stays in bearings under loads that squeeze out ordinary viscous oil-film. It stays on cylinders and pistons to cut wear at every start. Germ Processed oil gives low-cost mileage, too. In everything from light scout cars to heavy-duty trucks, Conoco Germ Processed oil will show you a saving on maintenance and operating expense. Test it and see for yourself!

CONOCO

CONOCO

Oil Field

LUBRICANTS

CONTINENTAL OIL COMPANY

CONOCO LUBRICANTS IN STOCK AT THESE POINTS:

CALIFORNIA
Los Angeles

COLORADO
Craig
Denver
Ft. Collins
Ft. Morgan
Pueblo

KANSAS
Arkansas City
Chanute
Eldorado
Herington
Hutchinson
Independence
Marion
Oxford
Russell
Wichita
Winfield

KENTUCKY
Owensboro

LOUISIANA
Lake Charles

MONTANA
Billings
Cut Bank
Great Falls
Lewistown
Shelby
Winnett

NEW MEXICO
Artesia
Farmington
Gallup
Hobbs

OKLAHOMA
Ada
Altus
Ardmore
Bartlesville
Chickasha
Duncan
Edmond
Enid
Guthrie
Muskogee
Oklahoma City
Okmulgee
Ponca City
Seminole
Tulsa

TEXAS
Amarillo
Beaumont
Big Spring
Borger
Breckenridge
Brownwood
Corpus Christi
Corsicana
Dallas
Fort Worth
Galveston
Houston
Longview
Marshall
McCamey
Mexia
Midland
Mineral Wells
Pampa
San Antonio
Tyler
Wichita Falls

UTAH
Salt Lake City

WYOMING
Casper
Glenrock
Greybull
Lovell
Lusk
Medicine Bow
Rawlins
Thermopolis
Worland

Trend Is Uncertain

DESPITE DISTURBING FACTORS THERE IS TALK OF CRUDE RAISE

OPPOSING forces are at work in the oil industry's markets, and the outlook consequently is characterized by considerable uncertainty.

On one hand there is further talk of possible crude price increases shortly. But on the other hand, recent statistics have not been encouraging, particularly the latest Bureau of Mines report on United States crude oil stocks, showing a comparatively heavy further addition to storage in the week ended April 3. It has become doubtful if April will bring a restoration of the balance between crude production and demand, despite the tightening up of allowables for the month.

Crude Raise Talked

Reports gained wide circulation last week to the effect immediate raising of crude oil prices was impending.

But most informed observers expressed considerable doubt that such increases will occur in the immediate future, although conceding that advances are distinctly possible around June 1.

This viewpoint coincided with the reported recent statement of W. S. S. Rodgers, president of The Texas Corporation, at Austin, that "If consumption rises as it is expected to do, the price of crude may be advanced soon, probably late in May or early in June."

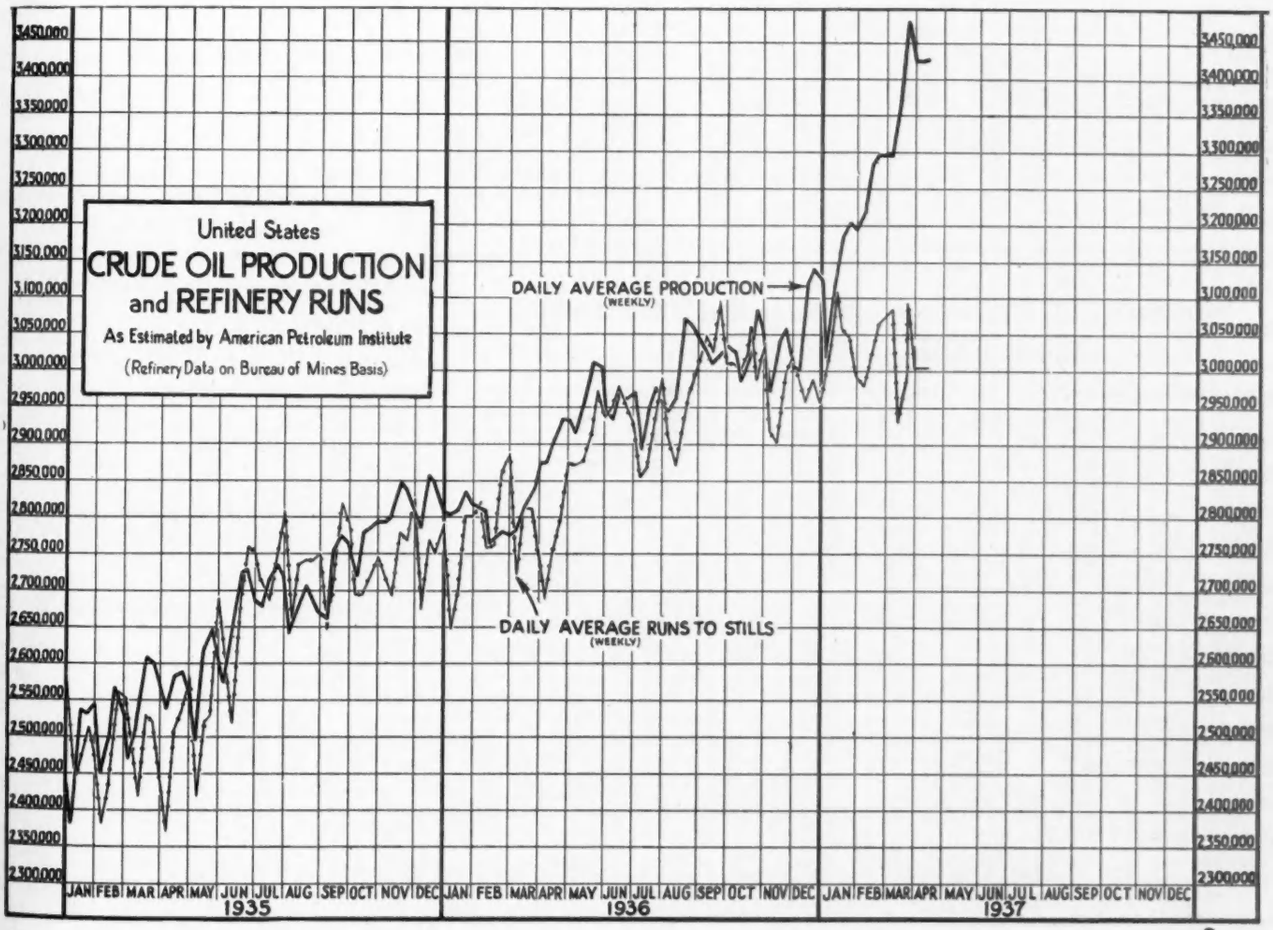
Hopes of producers for higher crude postings are based on lately announced increases of wages and salaries for oil industry workers, which increase costs of producing crude, and on the fact premiums of 5 to 15 cents a barrel are being paid in some districts, including East Texas, because of shortages of crude felt by some companies, especially the smaller ones.

On the other hand, it is asserted that the recent increases of about 10 percent in crude oil prices, which occurred in late January, have been only partially compensated by advances of refined oil prices. It is felt by some, consequently, that the present refined oil market structure does not fully justify higher crude prices.

Furthermore, the over-production of crude oil in the past 2½ months has tended to discourage higher crude prices. The report issued late last week by the Bureau of Mines on United States crude oil stocks showed a continuation of excessive crude production, 3,787,000 barrels of crude having been added to storage in the week ended April 3. That was a comparatively heavy increase.

Crude Stocks Rise

The production of crude was excessive in each of the 10 weeks ended April 3. Within the 10 weeks, the country's



crude storage was increased approximately 12,000,000 barrels, of which increase about 9,000,000 barrels occurred from the beginning of March to April 3.

The figures on crude stocks are causing some concern because they indicate that there may have been some slowing down of petroleum consumption in recent weeks, aside from the fact allowables have been too high.

Stricter crude production allowables for April promise to bring about better balancing of supply with demand, but the above evidence of heavy additions to crude stocks in March indicate the storage may show some further increase in April.

Lending reassurance, on the other hand, is the fact crude stocks still are about 15,000,000 barrels lower than one year ago.

Gasoline Stocks Decline

The latest information on gasoline stocks indicate a fairly satisfactory situation for the gasoline market. The nation's inventories have been declining for two weeks, following the setting of a new all-time peak, as favorable motoring weather has led to withdrawal of some gasoline from storage in meeting the demand. The total of 82,579,000 barrels of finished and unfinished gasoline on hand April 10 was about a million barrels less than the peak of two weeks previously. The April 10 inventories were about 12 percent larger than those on hand a year before. But gasoline consumption lately has been running around 10 percent higher than at this time last year.

Although much of the talk of possible boosting of crude prices last week referred to the Mid-Continent, there is similar discussion also in California. The allowables in that state for April are expected to bring about an effective balancing of supply with demand, and an accompanying strong crude oil market. The state allowable, under the voluntary proration rogram, is 580,000 barrels daily for April, or only 100 barrels a day more than recommended by the Bureau of Mines.

CRUDE PRICES

Complete table of prices paid for crude oil at the well in principal fields will be found on page 96 of The Oil Weekly, April 5, 1937. Hereafter this schedule will appear only in the first issue of each month except when changes are announced.

Refined Oil Prices

Prices of petroleum products late last week were mostly unchanged from a week before, although kerosene tank car prices were an eighth cent a gallon better in some instances. In the Chicago market, such an increase had occurred, putting the 41-43 water white grade at 4⅛ to 4¼ cents a gallon, and the 42-44 water white grade at 4¼ to 4⅜ cents. Corresponding prices f.o.b. Oklahoma refineries were 4⅛ to 4⅜ cents and 4¼ to 4½ cents.

Gasoline Unchanged

Gasoline tank car prices in the Mid-Continent were generally unchanged. The U. S. motor gasoline f.o.b. Oklahoma refineries continued at 5 to 5¼ cents a gallon for the 62 octane and below, 5⅜ to 5½ cents for the 63 to 67 octane, and 6 to 6¼ cents for the 68 to 70 octane.

Corresponding prices in the Chicago market were: 5 to 5⅛ cents, 5¼ to 5⅜ cents, and 5¾ to 6 cents.

In East Texas good demand resulted in one eighth-cent upward bidding of the refinery prices of gasoline, which late last week ranged from 5⅛ to 5¼ cents a gallon for the 60-62, 400 end point gasoline that was most common on the market.

The prices of fuel oils have remained mostly unchanged, although demand has been smaller for heavy grades.

Weekly Trends of United States Production and Stocks

(Figures American Petroleum Institute, except crude stocks, Bureau of Mines.)

WEEK ENDED—	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 9	3,117,800	3,110,000	286,912,000	65,402,000	105,971,000
January 16	3,184,650	3,045,000	286,044,000	66,559,000	104,841,000
January 23	3,205,150	3,055,000	285,211,000	68,180,000	103,441,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 6	3,220,750	2,980,000	286,116,000	70,535,000	101,136,000
February 13	3,286,050	3,020,000	286,158,000	73,585,000	100,735,000
February 20	3,295,950	3,065,000	287,574,000	74,798,000	99,391,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 6	3,298,800	2,930,000	289,611,000	80,102,000	99,115,000
March 13	3,372,850	2,985,000	290,613,000	81,226,000	98,964,000
March 20	3,448,150	3,095,000	291,555,000	81,623,000	97,287,000
March 27	3,431,300	3,060,000	293,587,000	83,538,000	96,591,000
April 3	3,422,350	3,005,000	297,374,000	83,157,000	95,805,000
April 10, 1937	3,426,300	3,005,000	.....	82,579,000	94,581,000
April 11, 1936	2,890,050	2,755,000	311,837,000	73,654,000	96,508,000

Summary of Wells Completed in the United States Week Ending April 17, 1937

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1937	Total this Date 1936
Alabama	....	....	....	....	.....	1	2
Arkansas	....	....	....	....	.....	21	30
California	30	25	....	5	16,630	362	279
Colorado	....	....	....	....	.....	6	5
Florida	....	....	....	....	.....	....	....
Illinois	....	....	....	....	.....	11	4
Indiana	....	....	....	....	.....	33	75
Kansas	47	32	1	14	41,495	636	423
Kentucky	4	4	....	....	145	55	56
Louisiana	12	7	1	4	2,430	197	279
Michigan	34	25	5	4	20,610	243	197
Mississippi	....	....	....	....	.....	6	1
Montana	2	2	....	....	85	24	26
Nebraska	....	....	....	....	.....	....	....
New Mexico	11	11	....	....	12,770	201	134
New York	....	....	....	....	.....	3	....
Ohio	17	5	5	7	7	470	605
Oklahoma	76	62	1	13	87,532	862	772
Pennsylvania	2	....	2	....	.....	47	....
Texas	289	221	9	59	272,699	3,073	3,403
Utah	....	....	....	....	.....	....	....
West Virginia	9	1	7	1	2	250	220
Wyoming	1	1	....	....	2,000	32	14
Total this week	534	396	31	10	456,405	7,533	6,514
Total last week	595	409	43	143	569,739	....	....
Total this year	7,533	5,085	673	1,775	6,485,408	....	....

Washington, D. C.—Daily runs to stills in February remained practically at the January level, being 3,035,000 barrels, a drop of only 3000 barrels, according to the monthly report of the Bureau of Mines, issued April 13. The February runs, however, were 224,000 barrels above the daily average for the corresponding month last year.

Total receipts of crude at refineries during the month were 86,027,000 barrels, of which 85,424,000 barrels were domestic and 603,000 barrels foreign oil, the bureau reported. Runs to stills were 84,984,000 barrels and fuel and losses 241,000 barrels, the heavier receipts resulting in additions to stocks, which increased from 45,445,000 to 46,247,000 barrels during the month.

Comparison of Permits Granted For New Wells

STATE	Week Ending April 17	Total this Mo.	Total this Year	Total this Date Last Year	1936 Year Total
Arkansas	5	17	52	26	103
California	35	113	425	250	1,054
Louisiana	47	60	272	346	1,107
Kansas	40	165	678	493	1,873
Michigan	41	74	282	186	762
Oklahoma	72	206	817	845	2,594
Texas	295	1,027	5,119	3,941	15,582
Total	535	1,662	7,645	6,087	23,075

Output Again Rising

INCREASE OF 25,000 BARRELS IN FIVE LEADING STATES

UNITED STATES crude oil production showed an increase for the past week, ended April 17, in averaging 3,426,425 barrels daily. That was 25,000 barrels a day more than reported in the previous week and 183,425 barrels a day more than the Bureau of Mines recommendation for average daily output in April.

Last week's production rate was not far under the all-time peak of 3,448,150 barrels daily that occurred a month ago in the week ended March 20.

All Contribute

The increase over the previous week resulted from higher production in Oklahoma, Kansas, Texas, Louisiana, and New Mexico, five of the six leading producing states. The other, California, showed a small decrease.

Oklahoma last week averaged 657,400 barrels daily, which was 15,775 barrels a day more than in the previous week and 47,800 barrels a day more than the Bureau of Mines suggestion.

Kansas showed an increase of 13,800 barrels in averaging 192,575 barrels a day last week, which was 9575 barrels daily in excess of the Bureau of Mines recommendation.

Texas output was up 3700 barrels, as new wells gradually increased the state's allowable, the daily average for the week having been 1,351,300 barrels daily. That was 53,400 barrels a day more than the federal allocation to the state.

Louisiana last week averaged 245,350 barrels daily, which was 525 barrels a day more than in the previous week and 550 barrels a day more than the federal allocation.

New Mexico production was up 100 barrels, at 106,300 barrels daily. That was 14,900 barrels a day in excess of the Bureau of Mines recommendation.

California output was 8000 barrels a day higher than in the previous week, averaging 621,000 barrels daily, or 41,100 barrels a day more than the Bureau of Mines suggestion.

"Boost crude price or face severance tax"—Marland

Oklahoma City.—Governor E. W. Marland April 16 gave the oil industry its choice between higher prices or a severance tax. In a prepared statement he singled out the buyers of crude oil with this:

"If we don't get a substantial increase in the price of oil immediately, we will have a severance tax on oil. There is no use of our increasing gross production tax based on a percent of the price of crude so long as the major companies control the price."

He cited the fact that state revenues come chiefly from oil and agriculture. The farmer is in distress on account of low prices for what he produces and high prices for what he sells. Furthermore, he cited the independent producer as going the way of the farmer. His statement was in favor of union labor, but he cautioned workers not to expect higher wages until producers get more for oil. The steel industry was informed that the oil industry can not continue to pay current prices for steel until the oil prices are up. His parting shot was:

"As a friend of the entire petroleum industry I say to the crude oil purchasing companies, get the prices up."

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in April)	ACTUAL PRODUCTION: BARRELS DAILY FOR WEEK ENDING April 17	April 10
TEXAS—			
Texas Panhandle	.....	70,200	72,800
North Texas	.....	66,600	66,500
West Central Texas	.....	32,600	32,200
West Texas	.....	190,200	190,100
East Central Texas	.....	112,100	110,600
East Texas Field	.....	457,400	456,600
South Texas	.....	227,800	226,700
Texas Gulf Coast	.....	194,400	192,100
Total Texas	1,297,900	1,351,300	1,347,600
OKLAHOMA—			
Oklahoma City	.....	167,225	165,425
Seminole Area	.....	133,100	131,900
Crescent	.....	15,050	12,575
Lucien	.....	14,350	13,500
Fitts	.....	94,475	84,025
Edmund	.....	20,075	24,375
Moore	.....	14,500	12,050
Others	.....	198,625	197,775
Total Oklahoma	609,600	657,400	641,625
KANSAS—			
Ritz-Canton	.....	5,550	5,400
Chase	.....	9,075	8,250
Hollow-Nikkel	.....	3,775	4,100
Sedgwick	.....	4,050	4,775
Burrton	.....	16,150	16,450
Lorraine	.....	4,850	4,425
Russell County	.....	28,775	25,250
Silica	.....	20,220	15,325
Others	.....	100,150	94,800
Total Kansas	183,000	192,575	178,775
LOUISIANA—			
North Louisiana	.....	69,750	69,725
South Louisiana	.....	175,600	175,100
Total Louisiana	244,800	245,350	244,825
ARKANSAS	27,400	26,600	27,300
CALIFORNIA—			
Long Beach	.....	61,000	61,500
Santa Fe Springs	.....	44,500	45,000
Huntington Beach	.....	38,500	39,500
Dominguez	.....	26,000	24,500
Inglewood	.....	11,500	15,500
Ventura Avenue	.....	34,500	35,000
Seal Beach	.....	9,000	10,000
Midway-Sunset	.....	72,000	74,000
Elwood	.....	9,500	9,500
Kettleman Hills	.....	80,000	78,000
Mountain View	.....	21,000	20,500
Playa del Rey	.....	9,500	9,500
Others	.....	204,000	206,500
Total California	579,900	621,000	629,000
MOUNTAIN STATES—			
Wyoming	44,000	51,600	50,200
Montana	14,600	15,200	15,300
Colorado	4,800	4,000	4,500
Total Rocky Mountain States	63,400	70,800	70,000
NEW MEXICO	91,400	106,300	106,200
EASTERN STATES	115,000	114,200	116,300
MICHIGAN	30,600	40,900	39,800
Total United States	3,243,000	3,426,425	3,401,425

IN THE

Financial Field

First quarter earnings higher in 1937 than in 1936.

* * *

Annual reports covering 1936 show improved results.

FINANCIAL developments lately have included the release of figures on earnings of several oil companies during the first three months of the year. Also, additional reports have become available on results in 1936.

Union Oil Company of California reports net earnings for the first three months of 1937 were $2,200,000, equivalent to 47 cents a share on 4,666,270 shares. This compares with $400,000, or 9 cents a share on 4,386,077 shares, in the same period of 1936.

Union Oil Company stated that the improved results are due to greater sales and better prices for products, although labor and material costs are running higher this year.

On the Pacific Coast, gasoline prices were extremely low throughout the first quarter of 1936, adversely affecting earnings in that period. The restoration of better prices did not occur until April of that year.

Union Oil Company last week increased its dividend to 30 cents quarterly, as against distribution of 25 cents paid in previous quarters.

Standard of California

Standard Oil Company of California and its wholly owned subsidiaries for 1936 reported net profit of $23,310,223, or $1.78 a share of issued capital stock. This compares with net profit in 1935 of $18,594,330, or $1.42 a share.

The company's annual report pointed out that in the first two months of 1936 there was a continuation of overproduction of crude and depressed crude and refined oil prices, as in the latter half of 1935. But production was cut back and higher prices restored in late February, 1936, and the industry was free of price disturbances during most of the remainder of the year. "There is reason to be optimistic," commented K. R. Kingsbury, president of Standard of California, "that the condition will continue during 1937."

Phillips Petroleum Company

It has been estimated that Phillips Petroleum Company for the first three months of this year will show profit of $5,250,000. This would represent an increase of about 60 percent over the reported earnings in the first quarter of 1936, when profit was $3,156,159. The better results this year are attributed partially to an increase in sales, higher crude prices, and larger crude production this year. The company produces more crude than it consumes at its refineries.

English Market Strong

The stock market in London recently has been featured by relative firmness in oil securities. The interest was due to prospects of favorable dividends, and to expectation of a further increase in British gasoline prices.

Wilcox Conversion Plan

H. F. Wilcox, president of H. F. Wilcox Oil & Gas Company, has stated that between 60 and 70 percent of the company's stockholders have approved the plan to convert 1 share of preferred stock into 15 shares of common stock. The company's directors will meet May 3, when the matter likely will be considered.

Sunray Oil Corporation

Sunray Oil Corporation revealed that in the first three months of 1937 it received an average price of $1.21 a barrel, compared with $1.05 a barrel in the corresponding period last year. The company's total crude production in this year's first quarter was 674,132 barrels, compared with 406,071 barrels in the similar period of 1936.

Earnings Up Over 50 Percent

Carl H. Pforzheimer & Company, in a recent survey, showed that net income of 20 leading oil companies in 1936 were up 53 percent over those of 1935. The group of companies reported aggregate profit of $173,597,485 in 1936, compared with $113,143,423 in 1935. Four companies in the group more than doubled the earnings in 1935, and six companies showed increases of over 50 percent.

Texon Oil Company

Texon Oil and Land Company (Delaware) and Texon Oil and Land Company of Texas reported net income of $341,306 for 1936, or 36 cents a share on 936,024 shares. In 1935 net income was $244,073.

Superior Oil Corporation and Subsidiaries for 1936 reported net profit of $147,895, or 14 cents a share, compared with $244,624, or 25 cents a share, in 1935.

Navarro Oil Company

Navarro Oil Company reported for 1936 net income of $291,090, after amortization, depletion, depreciation and other charges.

Indian Refining Company, controlled by The Texas Corporation, for 1936 reported net profit of $1,333,001, or $1.05 a share, on 1,270,207 shares of common stock, compared with $1,351,806, or $1.06 a share, in 1935.

California Petroleum Corporation and Subsidiaries, also controlled by The Texas Corporation, for 1936 reported net profit of $2,543,399, or $1.23 a share, compared with net loss of $51,470 in 1935.

Quaker State Oil Company in 1936 showed net income of $1,041,034, or $1.12 a share, compared with $914,567 or $1.01 a share in 1935.

Pan American Profit Up

Pan American Petroleum & Transport Company and subsidiaries, controlled by Standard Oil Company of Indiana, for 1936 reported net profit of $2,463,259, after charges, or 52 cents a share, compared with $490,598, or 10 cents a share, in 1935. The producing company of Pan American Petroleum & Transport Company had 53 oil wells and 2 gas wells at the end of 1936, after starting the year with production in only two fields. The company in the fall of 1936 began operating a large polymerization unit at its Texas City refinery.

Bishop Oil Corporation showed net profit of $178,019 in 1936, compared with $141,962 in the previous year. The 1936 profit was equivalent to 48 cents a share, compared with 38 cents a share in 1935. During 1936 the company completed three wells in California, four wells in Oklahoma, and produced and sold 578,580 barrels of crude, net after royalty in 1936. The company at the end of the year had gross curtailed production of 2,181 barrels daily from 61 wells; the production being in California, Oklahoma and Texas.

Universal Consolidated Company reported net profit for 1936 was $239,561, equal to $1.20 a share. The company for the year paid a dividend of $1 a share. The company had oil production of 809,939 barrels, after deducting royalties, and received for it an average price of $1.03 a barrel.

Seaboard Oil Company

Seaboard Oil Company of Delaware and subsidiaries reported net profit in 1936, after all charges, of $2,485,676, or $2 a share. This compared with $1.34 a share in 1935. The 1936 profit was 48 percent better than that of 1935. The improvement was attributed to larger crude oil production, and higher average prices received.

John M. Lovejoy, president of the Seaboard company, stated that "Extended negotiations with certain foreign government for oil concessions appear to be approaching a favorable conclusion." The negotiations are being handled, he said, through Inland Exploration Company, Amiranian Oil Company, and Iranian Pipe Line Company, in which Seaboard owns more than 50 percent interest.

These companies plan to study a vast area, including all of Afghanistan and a part of Iran. The plans call for ex-

tended geologic investigation, followed by exploratory drilling.

Ohio Oil Company

The Ohio Oil Company reported for 1936 net income of $7,881,571, or 70 cents a share on 6,563,377 common shares, after dividends on preferred shares. This compares with income of 33 cents a share in 1935. The company's sales of crude oil in 1936 were about 10 percent greater than in the previous year and were up about 23 percent in value. The company anticipates further increases of crude sales during 1937.

Shell Union Oil Corporation

Shell Union Oil Corporation for 1936 reported net earnings of $22,494,364, equal to $1.57 a share on common stock after preferred dividends. In 1935 the company reported net earnings of $6,812,835, or 37 cents a share. The Shell profits of 1936 were the highest in 10 years and were 230 percent over those in 1935. The company proposes to adopt a practice of paying, when justified, an interim dividend at the middle of the year, and a final dividend near the close of the year.

United Gas Corporation

United Gas Corporation has reported 1936 profit of $15,579,534, or 3.5 times all fixed charges. The balance was equivalent to $24.28 per share of First Preferred, 8.78 a share of Second Preferred, and disregarding preferred arrears, 20 cents a share of common. The company's crude oil sales in 1936 were $8,339,357, compared with $1,503,644 in the previous year.

FEBRUARY RECORD

Bureau of Mines report shows new high figures

Washington, D. C.—Daily crude oil production continued its record breaking climb throughout February increasing 148,000 barrels over the preceding month to reach a figure of 3,327,600 barrels, almost 500 barrels higher than for February, 1936, according to the monthly production report issued April 9 by the Bureau of Mines.

Because of shorter month, total February output was under that of January, being 93,173,000 barrels compared with 98,567,000 barrels, but was 11,053,000 barrels greater than that of February of last year.

"The increase in crude oil production far outweighed a material decline in imports," the bureau stated. "The demand side showed comparative little change, the net result being the addition of large quantities to storage. Crude oil stocks increased 3,213,000 barrels in February, compared with a decline of 1,425,000 barrels in January."

The indicated domestic demand for motor fuel was 32,000,000 barrels, 18 percent above the figure for a year ago. "This unusual increase reflects chiefly the difference in weather conditions in the two months," the bureau commented. "In this connection it is noted that about 1,100,000 barrels less of gas oil and distillate fuel oils were used than in February, 1936, although the number of domestic consumers had increased materially." Pertinent details regarding supply and demand of all oils in February compared with January were as follows: (in thousands of barrels)

Domestic production; crude 93,173 against 98,567; daily average 3,328 against 3,180; natural gasoline 2,565 against 3,732; benzol 227 against 247; total production 96,965 against 102,546; daily average 3,463 against 3,308.

Imports; crude, in bond, none either month for domestic use, 603 against 1,129; refined products in bond 1,485 against 1,802; for domestic use, 837 against 679.

Total new supply, all oils 99,890 against 105,534; daily average 3,568 against 3,404.

Increase in stocks all oils 6,445 against 1,485.

Demand; total 93,445 against 104,049; daily average 3,337 against 3,356; exports crude, 3,777 against 3,596; refined 6,736 against 7,935; domestic demand motor fuel 32,000 against 33,696; kerosene 4,226 against 5,297; gas-oil and distillate fuel 10,572 against 14,856; residual fuel oils 27,311 against 28,039; lubricants 1,518 against 1,763; wax 68 against 104; coke 444 against 520; asphalt 1,027 against 894; road oil 223 against 219; still gas 4,348 against 4,519; miscellaneous 189 against 157; losses 1,006 against 2,454; total domestic demand 82,932 against 92,518; daily average 2,962 against 2,984 stocks; crude 289,972 against 286,759; natural gasoline 4,290 against 4,032; refined products 232,314 against 229,340; total all oils 526,576 against 520,131; days supply 158 against 155.

NATIONAL BANK OF TULSA

TULSA, OKLAHOMA

STATEMENT OF CONDITION MARCH 31, 1937

RESOURCES

Cash and Due from Banks	$18,965,747.95	
U. S. Government Securities	18,025,168.60*	
Other Bonds and Warrants	7,161,623.08*	$44,152,539.63
Loans and Discounts		14,906,289.29
Overdrafts		5,298.21
Income Receivable Accrued		185,129.22
Stock in Federal Reserve Bank		180,000.00
Investment in Bank Premises		2,310,514.85
Customers' Liability under Acceptances		9,158.70
TOTAL		$61,748,929.90

LIABILITIES

Deposits		$55,359,444.00
Acceptances Executed		9,158.70
Income Collected not Earned		78,355.28
Interest, Taxes, etc., Accrued		73,679.55
Reserve for Preferred Dividend		13,125.00
Capital — Preferred	$1,750,000.00	
Capital — Common	2,250,000.00	
Surplus	2,000,000.00	
Undivided Profits and Reserves	215,167.37	6,215,167.37
TOTAL		$61,748,929.90

* Of the total of $25,186,791.68 U. S. Government Securities and Other Bonds and Warrants $14,984,711.15 mature within five years.

COMPARATIVE DEPOSITS

March 31, 1934	$34,014,106.94
March 31, 1935	39,269,375.86
March 31, 1936	49,688,027.17
March 31, 1937	55,359,444.00

The Oil Bank of America

Member Federal Deposit Insurance Corporation

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Canada Is Active

ALBERTA LISTS 26 DRILLING TESTS AND 50 LOCATIONS

NEW work continues to command interest in Turner Valley, Alberta, and other West Canadian fields.

Two new wells on the west flank of Turner Valley spudded last week, Royalite Oil Company's Davies Petroleum 2 and the Three Point well of R. A. Brown, Sr. and Jr., bringing active Turner Valley wells to 23.

41 Due to Spud

North American Petroleums is rigged and will spud soon. Cellars were being dug for two wells of West Flank Petroleums, Ltd., to offset on the west Sterling Pacific 4, the large Royalite Oil Company producer.

Another 41 wells are scheduled for spudding within the next few weeks.

Meanwhile, plans were under way to increase production at the only two small producers on the west flank of the valley—Royalite Oil Company's Dalhousie 8 and Newfold Royalties Ltd.'s well. Completed a week ago in unproven territory, Dalhousie 8 made only a small showing of oil at 6910 feet and arrival of a well-shooter from Montana is awaited. Treatment with 7000 gallons of acid was to take place this week at Newfold Royalties, completed several weeks ago as a small producer.

Deepest Active Test in Valley

Richland Oil Company's No. 3, deepest test in Turner Valley, was drilling below 5100 feet and believed to be in the Home sands. The limestone is expected at about 6700 feet. Richland's No. 2 was cleaning hole below 3100 feet, while Richland's No. 1, the newest of the group, was below 1600 feet and preparations were being made to run casing. The Richland group of wells are located near the B. & B. and Turner Valley Royalties wells, two of the largest producers of the Valley.

Royalite Oil Company's Sterling Pacific 5 was drilling at 2450 feet. It is the first of 17 wells being drilled on Calgary & Edmondton Corporation holdings.

National Petroleum Corporation's No. 2 spudded a week ago as the farthest south location in Turner Valley.

On High River structure, Imperial Oil Ltd.'s Arca wildcat was drilling at 8810 feet. Roxana Petroleums Ltd.'s test on Kootenay Dome, west of Calgary, was believed approaching or on top of the Banff shales, between the Madison and Devenish limes.

Eight Planned for Taber

The recently discovered Taber field will be the site of an eight-well drilling program by Plains Petroleum, the discovering company, R. I. Clancey, president, announced. Contract for the wells has been let and a rig is being moved in immediately for No. 2, which will be carried to the present producing horizon, now called the Clancey sands. Drilling is expected to take 60 days, after which No. 1 is to be deepened from its present 3250-foot level to the basic Ellis sands where the main production is expected. At its present level, the discovery well is yielding about 40 barrels of oil along with the same amount of water; the oil is being moved by tank car to Calgary. If the lower sands prove productive, the oil will be recovered from both horizons by puncturing the casing at the Clancey sands.

Shareholders of Graystone Consolidated, meeting informally last week, approved a proposal for completion of Graystone 1, formerly known as Signal Hill 2, on the Moose Mountain structure. Government records show the well has been drilled to 4165 feet and that gas showings were encountered at four levels and oil showings at three levels. No work has been done at the site since 1930.

Shortage of Drillers

Oil operators of Turner Valley were meeting with a representative of the immigration department of the Dominion government here with respect to importation of rotary drillers from the United States. There is a shortage of expert drillers in Turner Valley and some operators feel this summer's development program will be seriously hampered if expert help from the States is not obtained.

March deliveries of oil to Calgary refineries from Turner Valley reached a record point since gas conservation was applied in the field in July, 1931, almost six years ago. March deliveries to the Imperial Oil Company and British American Oil Company in Calgary totaled 133,216 barrels, of which 80,200 barrels was crude oil and 53,016 barrels was naphtha. The month was the first in the history of the Valley in which crude oil sales greatly exceeded naphtha sales.

Study Gas Conservation

Discussion of conservation measures occupied oil men last week following issuance of the annual report of the Canadian Western Natural Gas, Light, Heat and Power Company, Ltd. The report declared rapid gas depletion of the Turner Valley field was causing officials of the company "grave concern," and stated that the original rock pressure, estimated at 2050 pounds to the square inch, declined to 973 pounds in 1934, to 879 pounds in 1935, and to 783 pounds in June, 1936. The rate of decline has been reasonably uniform at 90 pounds a year.

Approximately 829,000,000,000 cubic feet of gas has been withdrawn from the field in its history, and of that total 80 percent, or 663,200,000,000 cubic feet has been wasted, according to the report. It is estimated that about 550,000,000,000 cubic feet of gas remains in the field, but by the time the rock pressure reaches 400 pounds per square inch, an additional 270,000,000,000 cubic feet of gas will have been withdrawn at the present rate of production, leaving about 280,000,000,000 cubic feet, "the greater part of which can never be recovered." The question of whether depletion of the field for naphtha recovery purposes was justified occupied the attention of operators.

Urge Line Construction

Construction of pipe lines to carry natural gas from the Turner Valley field to Regina, Saskatchewan, Winnipeg and other prairie cities was urged in the House of Commons last week by Denton Massey and M. J. Coldwell. Coldwell urged investigation of the construction as an unemployment relief measure, declaring it would cost $18,000,000 to lay pipes to Regina and Saskatoon. Present waste of gas in the Turner Valley field is criminal, Coldwell said, particularly when it could be such a boon to people in the cities.

PERMITS HALTED

For 5 months to foreign firms in Mexico

In connection with the reported objection by the department of petroleum to the article appearing in the March 8 issue of The Oil Weekly under the head, "Firms Jeapordized" on page 58, word from a reliable source in Mexico arriving in Houston April 12 is to the effect that no permits to drill have been granted foreign controlled oil companies in Mexico for five months.

The sub-deck of the head on the above referred to item was "Mexico's Nationalization Hard on Private Concerns," and it is a matter of record that there are more than 40 applications pending, applications made by companies other than Petroleos de Mexico, S.A., or its successor. Two applications for permits to drill were granted to "Petromex."

In the same period of time, five months, it is also reliably reported the responsible branch of the Mexican government has failed to issue a single concession, either of a confirmatory title or on free land, nor has this branch of the government transferred any.

The government is not refusing to grant these permits; it is merely failing to issue them. If the government were refusing to grant them, that would be a horse of a different color, it is said. The impression in Mexico City is that the government is acting simply on orders from President Cardenas. And while the alleged purpose of the president is not known, the general supposition is that a new petroleum law is in the offing which when passed will not leave the foreign operator without a shirt to his back.

This publication has written the chief of the department of petroleum of Mexico, asking him to answer the item in the March 8 issue of The Oil Weekly The letter was not posted until April 13, so he would not have had time to answer by the time this issue goes to press.

BRAZIL'S SHALE OIL

Julius Pintsch Company of Berlin, Germany, expects to produce 3500 tons of fuel oil and 400 tons of gasoline the first year of operation on the bituminous shale deposit in the Marahu district, State of Bahia, Brazil. The first load of machinery for erection of the extraction plant at Marahu is expected soon, the Brazilian government has been informed.

Brazil passed a law in December, 1936, providing for acquisition of land in the southern part of the State of Bahia and for financing exploitation of the bituminous shale deposit.

OUTLOOK NOT GOOD

Hume believes Ontario's prospects for oil small

G. S. Hume, of the Geological Surveys Branch of the Department of Mines and Resources, is of the opinion that Ontario, Canada, will never be able to increase the production of oil.

"The first development fields at Oil Springs and Petrolia are still the largest producing fields in Ontario and now yield about 160,000 barrels a year. The probability of increasing this supply is not good," Dr. Hume told members of the Canadian Club meeting in Toronto Monday.

"When the Ontario oil fields were first drilled, the demand was for coal oil, and gasoline was a wasted by-product. With the development of the internal combustion engine, the demand for gasoline became the dominant factor in the oil industry. That now is being seriously challenged by the demand for oil," Dr. Hume pointed out.

AID HEALTH DRIVE

Mexican Gulf Oil Company was one of several oil companies operating in Mexico to pledge cooperation and financial assistance in the health department's current hygienic and sanitation campaign in southern Tamaulipas and northern Veracruz.

PLANT FOR DUBLIN

Irish cracking unit will run variety of products

Construction of a cracking unit of the latest type will be an important part of the new refinery project of the Irish National Refineries, Ltd., at Dublin, Irish Free State. The cracking unit, which will operate under a license from Gasoline Products Company, Incorporated, will be adapted to the handling of a wide variety of feed stocks in response to the particular plant demands and will produce high anti-knock gasoline, as well as distillate and residual fuel oil cuts, adapted to marketing requirements in the Irish Free State. Approximate cracked gasoline capacity of the unit will be 900,000 barrels per year.

Galliot Honored

WILL HEAD WORLD CONGRESS DRILLING AND GEOLOGY GROUP

INFORMATION from headquarters of the Second World Petroleum Congress to be held in Paris June 14-19, inclusive, is that 14 nations have reacted favorably to the proposal of the French Institution of Petroleum Technologists, the sponsoring organization, to discuss specific problems of geology, drilling, geophysics, and production.

A. Galliot, director of the mining documentation office at the ministry of public works of France, has been chosen president of the section devoted to drilling and geology. He will be assisted by M. de Cizancourt, chief of the geological department of Compagnie Francaise des Petroles. These two will preside over sessions at which papers from Austria, Canada, Czechoslovakia, Netherlands East Indies, France and its possessions, Germany, Great Britain, Iraq, Iran, Poland, Roumania, Russia and the United States will be presented.

What Papers Will Consider

Each of the above nations will present under the geological division a short history of the development of research work, new fields discovered, and their importance. Development of geophysical studies, methods used, and practical results obtained therefrom are also included on the program.

Drilling will constitute one of the main symposiums of the congress. Handling the subject will involve histories of exploration and exploitation work, methods used, introduction of new methods, and statistics on exploration and exploitation drilling.

L. Chove, former student of Ecole Polytechnique and now professor of Ecole Nationale Superiure du Petrole de Strasbourg, will head the World Petroleum Congress sessions devoted to materials and construction. Included on the program of this division of the congress will be a thorough study of the construction of high temperature and high pressure apparatus, the struggle against corrosion in the petroleum industry, and the limitation of losses in the petroleum industry. Papers and communications received thus far for this division of the congress have emphasized the use of special steels and controlled welding. Due to the fact that the corrosion subject involves application of both mechanical and chemical engineering, sessions on this subject will be participated in by the physicists and chemists as well as the petroleum engineers.

Mercier to Handle Economics

Economics and statistics will be presided over by Maurice Mercier, general secretary of Compagnie Francaise des Petroles, who will lead the discussions in such a manner that future studies can be made later on and taken up again by future World Petroleum Congresses. Main lines of study in Merciers division will include world fiscal and customs legislation as applied to oil products, terminology of the petroleum industry, standardization of statistical methods, measurement of liquid fuels, general situation of the oil industry in various countries at the beginning of 1937, technical teaching of petroleum, and geography, history and archaeology of petroleum. Added to the foregoing will be studies of the vital problems of production, transportation, distribution, and consumption of petroleum products.

OKLAHOMA FIELDS

Southward extension well for old Cromwell field.

* * *

Fitts gets its third Cromwell sand producer.

* * *

Tulsa Airport field has twenty drilling tests.

Tulsa. — Drilling development was steady and wide-spread in Oklahoma last week. Among the more interesting events reported was the southward extension of the Cromwell pool of Seminole County; the third Cromwell sand producer at Fitts; and important community test in Pottawatomie County, and continued rapid development in the Airport pool near Tulsa.

Cromwell South Extension

Southward extension of the Cromwell pool of Seminole County was started last week by Sinclair Prairie Oil Company's Rossanna 1, NWc SW 28-10n-8e, which found the Viola lime at 4115 feet and set seven-inch casing at 4125 feet. Drilling was resumed April 9, and the Simpson sand was found at 4135 feet. It began showing for oil at 4169 feet.

At this depth, operators measured 900 feet of oil in the hole, and at 4171 feet, it had risen 1100 feet in the hole. Another increase was noted when the well reached a depth of 4172½ feet, the oil column standing 2000 feet in the hole. At 4189 feet, the well swabbed 135 barrels of oil in 16 hours. Field men say the well bears out the contention of many that a good Wilcox structure will be found on the big Cromwell high in the area.

Fitts has Cromwell Sand

Oil men are keeping a close watch on an important Cromwell sand producer in the Fitts field of Pontotoc County. The well is Magnolia Petroleum Company's Simpson 18, SEc NE 29-2n-7e, the third well in the field to produce from that formation. Top of the sand was found at 2395 feet, and was drilled to 2522 feet. It flowed 600 barrels of oil through casing in 24 hours April 13, and 400 barrels of oil through casing in a later test. It was shut in following the flow.

Location for an important community test in the Shawnee area of Pottawatomie County was announced last week, and will be near the big bend of the Canadian River, six miles north of Shawnee, located at SEc NE 24-11n-4e.

The block consists of 286.70 acres, comprised of E½ E½ 24-11n-4e and W½ W½ 19-11n-5e, and will be operated by Mid-Continent Petroleum Corporation which hold 27.903 percent interest in the block. Others include Atlantic Refining Company with 27.892 percent; Ohio Oil Company with 17.300 percent and Stanolind Oil & Gas Company and Amerada Petroleum Corporation, each holding 13.951 percent of the tracts. It has been given a thorough seismic survey by the holding firms.

Nearest test was drilled by Shaffer Oil & Refining Company (now Deep Rock Oil Corporation) in 1926, in SEc 26-11n-4e. The well was eventually abandoned at 22 feet below the base of the Viola lime, probably in the Simpson dolomite. Before being abandoned, the old well filled with a heavy gravity crude in 24 hours from the Cromwell sand, topped at 4793 feet. No attempt was made to save the production. The new location is one mile north of this test.

Because of extensive developments which have taken place in the area in recent months, including a new pool in the Earlsboro sand north of Shawnee, residents and oil men of the area are watching the test with intense interest.

Mid-Continent Petroleum Corporation's Logan 1-A, NEc SE 31-11n-5e, northeast of Shawnee, topped the Viola lime at 4762 feet; topped the Dense at 4788 feet; topped the Dolomite at 4800 feet, and stopped to core. In a core taken from 4827 to 4843 feet, the recovery consisted of 12 feet of dolomite and four feet of Wilcox sand, found at around 4839 feet. The bottom two feet of the core was bleeding when pulled from the hole and operators were running seven-inch casing.

Airport Field Busy

The new Airport pool some eight miles northeast of Tulsa, may furnish basis for citizens of Oklahoma City applying the age-old axiom which says, "He who laughs last, laughs longest." It is rumored residents of White City addition, east of Tulsa intend filing a petition with the city council requesting they be disannexed from the city in order to permit drilling there.

With the trend of the new area steadily tending to the southwest, the addition looks to be in line with development, as more than 20 drilling masts were noted in the field last week. Southwest extension well for the area, brought in last week, was Adams, Boyd and Pursers' Fox Greenhouse 1, in Lots 17 and 18 of Greenlawn addition, near NEc 3-19n-13e. The well had broken and solid sand from 1086 to 1109 feet, and looks good for better than 50 barrels of oil daily as operators connected up and were cleaning out.

Another new completion was reported for the field during the latter part of the week, and was J. J. Byrne's Hattie L. Wilson 2, near CSL SW NW 35-20n-13e, in Aviation View addition. The Bartlesville sand was had from 1079 to 1095 feet and showed good saturation when given an 80-quart shot. The second on the tract, it is also the twenty-sixth producer for the area, and was cleaning out and running casing when last reported.

A survey shows 26 producers in the field, some on the pump and some being connected to the line of Sinclair Prairie Refining Company, only buyer of the crude being produced there. It has a gravity of 41.

Good Wells at Fitts

Several good producers were reported from the Fitts field. Amerada Petroleum Corporation's Wooley 10, SWc NE 22-2n-7e, topped the Hunton lime at 3690 feet and drilled to 3836 feet. Two and one-half inch tubing was set at 3630 feet and the well flowed 680 barrels of oil in six hours through tubing. It was acidized with 5000 gallons and was waiting on acid reaction.

Shell Petroleum Corporation's Bates 2, NEc NW 26-2n-7e, topped the Bromide sand at 4205 feet and drilled to 4306 feet. It swabbed and flowed 90 barrels of oil 24 hours. Tubing was being pulled and the well was to be drilled deeper.

E. H. Moore's Mack 1-A, SW NW SE 28-2n-7e, topped the Hunton lime at 3232 feet and drilled to 3500 feet. It was acidized with 5000 gallons and set two and one-half inch tubing at 3473 feet. The well then flowed 164 barrels of oil the first hour through tubing and 25 barrels of oil the next 15 minutes. It was shut in for potential.

Blackstock Oil Company's Moody 6-A, SW NW SW 23-2n-7e, was completed for a potential of 3637 barrels of oil and 2,500,000 cubic feet of gas after topping the Hunton lime at 3601 feet. It was drilled to 4012 feet in the Sylvan shale.

Fleetborn Oil Company's Lewis 1, SEc SW 19-2n-7e, topped the Viola lime at 4105 feet and drilled to 4347 feet. The well was acidized with 10,000 gallons and flowed 140 barrels of oil in 15 minutes through casing. It was shut in for potential.

Skelly Oil Company's Park College 19, NW SW NE 28-2n-7e, was brought into production. It topped the Hunton lime at 3288 feet and drilled to 3547 feet, where it flowed five barrels of oil per hour natural into pits. It was acidized with 10,000 gallons and was waiting on acid reaction.

Skelly Oil Company's Ingram 3, SE SW NW 23-2n-7e, the farthest north producer in the Fitts field, made 3089 barrels of oil from the Hunton lime on a 24-hour potential. Amerada Petroleum Corporation's Wooley 7, NWc SW 22-2n-7e, flowed 3524 barrels of oil and 3,837,000 cubic feet of gas from the Hunton lime in 24 hours. E. H. Moore's Harper 2-A, SE SW NE 29-2n-7e, flowed 485 barrels of oil in 24 hours

from the Cromwell sand on the last gauge taken, and Moore's Muse 1, SW NE SE 33-2n-7e, had flowed 112 barrels of oil the last 24 hours gauged.

Continental Oil Company's Helms 1-A, NW SW SE 2-1n-7e, in the Jesse pool of Pontotoc County, topped the Bromide sand at 4438 feet and drilled to 4564 feet, the old total depth. The well was drilled deeper to 4615 feet and flowed 33 barrels of oil in 24 hours while drilling.

Amerada Petroleum Corporation's Goodman 3, NW NE NE 5-10n-4e, in the Shawnee pool of Potawatomie County, swabbed and flowed 165 barrels of oil in 11 hours from 4427 feet in the Wilcox sand. The well later made 430 barrels of oil in 19 hours through tubing and was continuing to test.

Fleetborn Oil Company's Ard 1, NE NW SE 28-8n-8e, in the Wewoka pool of Seminole County, topped the first Wilcox sand at 4263 feet, based at 4295 feet; topped the second Wilcox sand at 4325 feet and cored from 4325 to 4336 feet. Seven feet of the recovery was white hard salty sand, and the well was ordered plugged at a total depth of 4336 feet.

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
Carl Carter, Harley 3, nw sw nw 19-2s-3w	8	392
Carter Oil, Ward 40, se ne nw 6-4s-3w (pb 1139)	46	1146
CLEVELAND COUNTY—		
Anderson-Prichard, State 2, nw sw se 16-10n-2w	¶95 & 24,108	7262
COMANCHE COUNTY—		
Reynolds et al, Truett 1, nw se se 26-2n-11w	3	241
CREEK COUNTY—		
Nabob Oil, Smith 1-A, se se nw 30-14n-8e	135	4025
Crosbie and Sinclair Prairie, Bailey 1, ne nw nw 28-16n-8e	*	3808
Berry Bros. et al, Ingalls 1-A, cs½ se se 24-17n-7e	¶3	964
Mershow et al, Brown 1-A, sw sw sw 31-18n-10e	5	2500
HUGHES COUNTY—		
Magnolia, Frederick 1, nw ne sw 5-7n-8e (pb 4033)	86	4198
JACKSON COUNTY—		
Burke Royalty, Minor 5, sw ne ne 15-1n-20w (otd 1325)	7	1330
Pioneer Oil, Sharp 1, ne nw se 23-1n-20w	*	2297
LINCOLN COUNTY—		
Amerada, Holik 1, se se nw 10-12n-5e	116	4325
Magnolia, Ross 9, ne se se 2-14n-3e	15	4431
Sun Oil, Arinwine 1, ne sw se 35-15n-2e	970	5099
Skelly, Sporn (West) 1, sw nw sw 21-17n-3e (pb 4644)	¶1 & 230	4661
LOGAN COUNTY—		
Amerada, Denny 3, nw se se 33-17n-4w (pb 6194)	244	6399
Stanolind-Amerada, Goddard 1, ne ne sw 20-18n-4w	*	6262
MARSHALL COUNTY—		
Kingston O&G, Heffner 1, ne se nw 21-7s-6e	*	910
McCLAIN COUNTY—		
Marshall, Donohue 1, ne ne se 36-5n-3e	lcn.	abd.
MUSKOGEE COUNTY—		
Beard et al, Beams 2, ne nw nw 10-13n-16e	15	1767
Mussellem, Bartholet 1, se se nw 17-14n-17e (otd 1878)	*	1961
Spears et al, Robbins 1, nw nw nw 20-15n-20e	*	1811
NOBLE COUNTY—		
Stanolind-Amerada et al, Fredrick 4, cnw se 28-20n-2w	¶1½ & 911	5165
Phillips & Shell, McCaughtry 7, ne sw ne 21-23n-2w	¶4½ & 3524	4323
OKFUSKEE COUNTY—		
Manahan, Bunner 3, sw se se 24-10n-8e	160	1875
Bunner 4, ne ne se 24-10n-8e	80	1875
Dolton 17, sw se sw 36-10n-8e	20	1747
Blackwell, Lehmer 4, sw sw nw 17-10n-9e	80	1945
Arkansas Royalty, Brooks 2, se ne sw 18-10n-9e	75	1901
Fisher 8, ne ne se 18-10n-9e	75	1930
Blackwell, Lehmer "B" 1, ne sw nw 18-10n-9e	48	1897
Chapman, Yarbrough 8, nw nw ne 18-10n-9e	8	1873
Sinclair Prairie, Fisher 7, sw se sw 19-10n-9e	96	1804
Chapman, F. Williams 12, nw ne nw 30-10n-9e	289	1790
W. W. Bassett, Knight 1, nw ne sw 27-13n-10e	lcn.	abd.
OKLAHOMA COUNTY—		
British American, Parkway 2, nw sw ne 27-12n-3w	7131	6510
Parkway 3, sw sw ne 27-12n-3w	6951	6524
Inland Dev., Capital 1, nw ne se 27-12n-3w	661	6505
Phillips, Stikes 6, se nw ne 34-12n-3w	5020	6503
Champlin Ref., Cato 1, se ne ne 35-12n-3w	65	6571
Transwestern Oil, Suneram 6, ne sw ne 6-13n-3w	¶8 & 933	6615
Owens 3, se ne se 19-13n-3w	lcn.	abd.
OKMULGEE COUNTY—		
Ramsey, Wright 1-A, ne se sw 22-14n-14e	*	1270
OSAGE COUNTY—		
Link Oil, 9, cnw 4-22n-12e	5	1699
Barnsdall, 15, se nw sw 17-23n-12e	35	1540
Lewis Prod., 6, sw se se 28-24n-7e	314	2654
Arthur Oil 26, ne se sw 5-25n-12e	5	1726
PAWNEE COUNTY—		
Wood Oil, Davis 1, cn½ n½ ne 36-20n-7e	*	3655
Remington Drlg., Lincoln 1, ce½ nw se 26-20n-9e	*	1265
PONTOTOC COUNTY—		
Mid-Continent, G. Statler 3, se ne sw 2-1n-7e	¶2½ & 4530	4510
Burk-Greis Oil Chambers 4, se ne nw 36-2n-6e	¶2¼ & 3762	4433
Moore, No. 12 Akers, nw nw ne 36-2n-6e	¶3½ & 2856	3765
Magnolia, Norris 10, se nw se 21-2n-7e	¶2 & 1050	4310
Sinclair Prairie, Moody 3, se se ne 22-2n-7e	¶3½ & 3245	3846
Wooley "B" 20, nw ne sw 22-2n-7e	¶1½ & 2483	3785
Skelly & Phillips, Metropolitan Life "B" 1, se ne sw 23-2n-7e	¶2¼ & 5353	4040
Phillips, Bates 4, nw ne nw 26-2n-7e	¶1¾ & 2130	4300
Simpson, Westheimer 6, se sw nw 26-2n-7e	2891	4288
Fleetborn Oil, Simpson 8-A, sw nw sw 27-2n-7e	¶3 & 2251	3527
Moore, Mack 2-A, se nw se 28-2n-7e	¶5½ & 781	3460
Crosbie, Hardin 4-B, se sw ne 30-2n-7e	¶2¾ & 1381	3577
Phillip Boyle, Malloy 1, se sw sw 30-5n-4e	lcn.	abd.
McCracken 1, ne nw nw 31-5n-4e	*	2170
Marshall, Porter 1, ne sw nw 31-5n-4e	*	1941
Mid-Texas, Porter 1, nw se nw 31-5n-4e	*	3132
Sinclair Prairie, Snow 3, se nw sw 28-5n-8e	3	808
POTTAWATOMIE COUNTY—		
Phillips, Atwater 1-B, ne se se 9-7n-4e (pb 3485)	160	3491
Peru, Vinson 1-B, nw se ne 13-7n-4e	24	4115
Carter, Monette 3, sw ne sw 35-7n-4e	1382	4315
SEMINOLE COUNTY—		
Sinclair Prairie, Anow "B" 3, nw nw sw 7-5n-8e	15	4285
Jones Drlg., Coker 1, nw nw sw 1-8n-5e	96	4164
Pure Oil, Townsend 1, sw sw ne 12-8n-5e (pb 4037)	152	4382
Vierson, Long 1-A, ne nw se 32-8n8e	75	4034
Carter, Kiker 1, cw½ ne nw 11-9n-6e (otd 4025)	51	4053
Rodgers, Pilot 1, sw ne nw 16-9n-7e (pb 3470)	12	3529
Amerada, L. B. Smith 1, ne sw sw 3-10n-5e	246	4668
Ross Oil, B. Johnson 1, ne ne sw 24-10n-7e	*	3567
Crosbie, McGirt 1, sw se se 25-10n-7e	87	3664
STEPHENS COUNTY—		
George Pace, Fee 13, se nw nw 28-2s-7w	25	1711
Raizen Bros., Price 12, nw se sw 10-3s-5w	17	1451

*Failures; †Junked; ¶Million cu. ft. gas.

Moore south extension test. Enlarge two Noble fields.

Oklahoma City.—Two pools in Noble County were extended, the Moore field of Cleveland was also enlarged, and the fourth producer was had on the Parkaway tract south of the state capital in the Oklahoma City field.

Gulf Oil Corporation's Allen 1, NE SW SW 27-10n-2w, not only extended the Moore pool of Cleveland County to the south, but came into production after many had thought the well was to be a disappointment. It was drilled to the Wilcox sand where it found water, but was later plugged back to the Simpson, acidized with 3000 gallons at 7216 feet, and made a flow of 1288 barrels of oil in 10½ hours through 2½-inch tubing. It established a potential of 3593 barrels of oil in 24 hours and had 8,000,000 cubic feet of gas.

Tide Water Associated Oil Company's Hackett 3, SE NW SE 21-23n-2w, extended the Billings pool of Noble County to the south last week, flowing 709 barrels of oil in the first 6 hours of a potential test. It later established a potential of 2677 barrels of oil in 24 hours, accompanied by 8,000,000 cubic feet of gas. The company made location for Hackett 5, SW NW SE 21-23n-2w, as a west offset to the extension.

Lucien Is Extended

Sinclair Prairie Oil Company's Glocker 1, NEc SE 32-20n-3w, extended the Lucien pool of Noble County one location southwest last week, flowing around 100 barrels of oil an hour when drilled to 4998 feet in the Wilcox sand. The large flow was unexpected, as an offset to the east, Sun Oil Company's Pfeiffer 3, NWc SW 33-30n-2w, had only a show of oil in the first Wilcox sand and was drilling ahead at 4970 feet.

At the south end of the field, in the Logan County portion of the area, Champlin Refining Company's Pfeiffer 2, C N½ N½ NW 4-19n-2w, had the first Wilcox sand at 4912 feet, drilled to 5017 feet and flowed 240 barrels of oil in 1 hour. It gauged 2790 barrels of oil in 19 hours and was cleaning out to drill deeper.

Helmerich & Payne et al's Ruck 1, C NE SE 9-19n-2w, 1½ miles south of the Lucien field, topped the Woodford shale at 5240 feet; topped the Viola lime at 5340 feet and cored to 5425 feet in the Wilcox sand with nothing showing. When last reported it was at 5442 feet in hard, white salt sand. It looks disappointing and may be abandoned.

New Parkaway Well

British American Oil Producing Company et al's Parkaway 4 was completed as the second best producer on the state tract south of the capital April 13, rating a potential of 7656.96 barrels of oil a day from 6524 feet in the Wilcox sand. On potential test, the well flowed 20.96 barrels of oil the first hour, 376 barrels the second hour, and 262.08 barrels of oil the third hour, production being on gas lift and bottom-hole pump. It ranks second only to the Parkaway 1 which was completed for 7670 barrels of oil. It is the fourth well completed on the tract.

Phillips Petroleum Company's Channell 1, NEc NW 33-17n-4w, in the Crescent pool of Logan County, flowed 170 barrels of oil the first hour and 60

barrels the second hour on gas lift from 6567 feet in Wilcox sand. On the last gauge, the well made 379 barrels of oil in 4 hours on gas lift with about 4,000,000 cubic feet of gas daily. It was shut in for pipe line connections.

Mid-Continent Petroleum Corporation's Campbell 6, NE SE NE 3-17n-4w, averaged 5 barrels of oil per hour for 12 hours on gas lift after topping the Wilcox sand at 6100 feet and drilling to a total depth of 6103 feet.

Shell Petroleum Corporation and Phillips Petroleum Company's McCaughtry 10, NW SE NE 21-23n-2w; their McCaughtry 11, NW SW SE 21-23n-2w, and their Hackett 2, SW NE SE 21-23n-2w, were all new locations made in the Billings pool of Noble County last week.

Their McCaughtry 8, SE NW NE 21-23n-2w, was running tubing after flowing 5188 barrels of oil in 10 hours and 35 minutes from a total depth of 4309 feet with drill pipe in the hole. McCaughtry 9, SWc NE 21-23n-2w, was waiting on cement after topping the Wilcox sand at 4299 feet.

Transwestern Oil Company completed Meeker 1, NW NE NW 29-13n-3w, in the Britton pool of Oklahoma County, for a potential of 2506 barrels of oil daily from a sandy dolomite at 6680 feet after being shot and acidized. The well flowed 202 barrels of oil the first hour, 151 barrels the second hour, 47 barrels the third hour, and 18 barrels the fourth hour.

The company's McGrew 1, SWc 20-13n-3w, an old well drilled deeper to Wilcox sand production, topped the sand at 6782 feet and at 6795 feet was flowing 15 barrels of oil an hour.

Another gusher appears definite for the Moore pool of Cleveland County as Sinclair Prairie Oil Company et al's Bagby 2, NE SW NW 27-10n-2w, flowed mud and oil over the top of the derrick several times April 14. The well bridged over several times so could not clean itself, and was shut in later. It was at a total depth of 6300 feet in the Wilcox sand.

A new producer was had in the north Oklahoma City field last week at Anderson-Kerr's Kaye Dawson 1, near Northeast Thirteenth Street and Lincoln Boulevard. The well topped the Wilcox sand at 6402 feet and was spraying oil and gas while drilling ahead below 6427 feet.

72 NEW STARTS

Tulsa, Okla.—Although first reports reached a total of 72 for the past week, being 2 less than the previous week, completions jumped to 80, an increase of 8. There were 62 oil wells producing 87,532 barrels of oil, and 1 gas well producing 3,000,000 cubic feet of gas. There were 13 dry holes and 4 abandoned locations. In locations, Pontotoc County led with 24. Osage and Seminole counties each had 8; Okfuskee and Okmulgee 5 each; Creek County 4; Hughes, Lincoln and Pottawatomie counties 3 each; Carter, Kiowa and Logan counties each had 2, and there was 1 apiece for Garvin, Muskogee and Stephens counties.

HEARING APRIL 28

Oklahoma City.—Evidence upon which to fix the allowable of Oklahoma oil fields for May will be heard by the Oklahoma Corporation Commission April 28.

KANSAS FIELDS

Harbaugh field is extended slightly to south.

* * *

West outpost to Chase field encounters water.

* * *

A 3000-barrel well is completed at Bloomer.

Wichita.—Although drilling in Kansas the past week did not show anything spectacular, the state continued high in the operations scale of the Mid-Continent oil area. Items of particular interest included an extension in Russell County; a new location in rank wildcat territory; possible west limitation of the Chase pool, and completion of a big producer in Ellsworth County.

Harbaugh Field Extended

National Refining Company's West Reinhardt 2-A, SE NE NW 36-14s-15w, was being completed, and extends the Harbaugh pool of Russell County one location south. The new producer filled with 3000 feet of oil in the hole and no water in less than 24 hours from the Gorham sand, top 3186 feet. The well appears to be good for about 1000 barrels of oil daily, total depth 3204 feet. Tubing and rods were being run in order to give the well a potential test.

A test for oil is to be started in wildcat territory in Barber County sometime this week by Pryor & Lockhart, drilling the well for the Ranger Oil Company. The company has a block of 1600 acres in the county, and location has been staked at C SE 7-31s-13w, on land belonging to J. L. Gant. The test is approximately 12 miles northwest of production in the Wheland pool and equidistant from the town of Medicine Lodge. It is also about the same distance north and west from the Viola lime oil discovery in the old Medicine Lodge gas field. Contract depth is 5000 feet.

Chase Defined to West

Skelly Oil Company and Ewers-Simpson Oil Company's Linville 1, SW NW NE 2-20s-10w, may define the western limit of production in the Chase pool of Rice County. The hole filled 600 feet with water after drilling out the plug at 3327 feet in the Siliceous lime. Top of the lime was found at 3315 feet, but a core recovered at that depth was brown, indicating presence of residual oil at one time. It was shut down for orders.

Big Bloomer Well

Yarnell & Spencer's Patzner 2, NE NW SE 36-17s-11w, in the Ellsworth County portion of the Bloomer pool, was completed last week as a big producer from the Siliceous lime at 3257 feet. The well is the first to go on potential on the Patzner tract, which is almost surrounded by active production. During the first 18 hours of the test, the well flowed 2200 barrels of oil. Later reports stated the well flowed 147 barrels of oil during the twentieth hour. Operators' prediction the well would be good for 3000 barrels was almost correct, as it established a potential of 2625 barrels of oil daily.

Patzner 3, an east offset to the No. 2 well, hit an unexpected flow of gas and some oil in the Lansing lime at 3045 feet. Oil production was estimated at around 10 barrels an hour, but it was not known whether any effort was being made to save the output. It is probable the well will be drilled ahead to the Siliceous lime in search of bigger production.

Skelly Oil Company's Interurban 3, C SW 30-27s-10w, in the Cunningham pool of Kingman County, was showing for 16,600,000 cubic feet of gas from the Simpson sand at 4117 feet. The well, which encountered 51,000,000 cubic feet of gas in the Viola lime at 4027 feet, ran 7-inch casing to 4088 feet to shut out the gas before drilling ahead to the Simpson, topped at 4098 feet. It cleaned itself at the total depth and a gauge of the gas flow was made.

Indian Territory Illuminating Oil Company's Schrepel 1, SEc NE 26-20s-11w, in Barton County, completed a 24-hour potential test, during which time it flowed 1451 barrels of oil. Production followed acidization with 2000 gallons.

Atlantic Refining Company's Gossman 1, NWc NE NW 8-21s-7w, in the Saxman-Hauschild area of Rice County, had conglomerate from 3337 to 3338 feet and made 243 barrels of oil in one hour as tools were coming out of the hole. It was shut in for separator and another 4-inch line before potential could be taken. It is classed as a new gusher.

Gulf Oil Corporation's Gossman 1, NWc SE 8-21s-7w, in the Theede sector, was completed for 148 barrels of oil from the conglomerate at 3377 feet after being acidized.

Manning & Martin et al's Mathes 1, SEc SW NE 27-21s-8w, southeast of Sterling and west of production in the

Hauschild area, was abandoned as a dry hole at 3710 feet in the Siliceous lime. Operators had previously experienced considerable trouble with stuck drill pipe. Douglas & Gear's Brothers 1, SEc NW 25-20s-8w, north of production in the Hauschild pool, got a hole full of water in the Siliceous lime at 3689 feet. It was dry and abandoned.

Aylward et al's Johnson 3, NEc 17-21s-7w, in the Alberta Johnson pool, was completed for 1016 barrels of oil, coming from the conglomerate at 3380 feet.

Aylward et al's Meirs 1, NWc 6-12s-17w, west of the Shutts pool of Ellis County, had the Dodge lime at 3375 feet and yielded approximately 20 barrels of oil. When the flow was exhausted the crew deepened, and found the Lansing lime at 3410 feet. It was drilling ahead.

Carter Oil Company has staked location for Staab 2, C EL NW 11-12s-18w, as an east offset to Staab 1, which was completed in the Siliceous lime for 900 barrels of oil, and which extended the Walters pool three locations south.

Bemis South Edge Well

The Texas Company's Bemis 1-A, NEc 28-11s-17w, one of the farthest south producers in the Bemis pool, was completed for 1378 barrels of oil natural from the Siliceous lime at 3445 feet. The company's Bemis 1-B, farthest north test in the pool, was completed for 475 barrels of oil, cutting 12 percent water from the Siliceous lime.

Central Petroleum Corporation's Rouback 1, NEc 15-14s-15w, looked to be an extension well for the Gorham pool of Russell County, filling 800 feet with oil in 1 hour from the sand. It was being tested. The same company recently completed the biggest Gorham sand producer in the area at Foster 3, NEc 3-14s-15w, which made 2438 barrels of oil on a 24-hour test between 2296 and 3300 feet in the sand.

Clyde Pulse et al's Payne 1, SW NW NE 4-22s-7w, north of Nickerson in Reno County, was preparing to take a third acid treatment in the Kansas City lime at 3244 feet where a good showing of oil was had. The well flowed 80 barrels of oil in 12 hours after being acidized the second time, and it is thought another treatment will materially increase production. It is 4 miles south of production in the Hauschild area of Rice County.

Barnsdall Oil Company's Westfall 2, C WL SE 19-24s-4w, in the Haven pool, was completed for 954 barrels of oil from the chat at 3396 feet following acidization.

Carter Oil Company's Rubart 1, SEc 24-18s-16w, in the Otis gas and oil pool of Rush County, topped the Reagan sand at 3482 feet and cored to 3543 feet after picking up the granite wash at 3538 feet. Seven-inch casing was run to 3533 feet to shut a flow of gas in the top of the sand. Casing was perforated with 67 shots and the well made 3 barrels of oil in 1 hour, 30 percent of which was water. Testing was being continued.

S. A. Murphy's Roth 1, NWc SW 21-16s-18w, near Liebenthal, in Rush County, had rebuilt rig and was drilling ahead. The well had previously drilled to 2750 feet in the Neva lime when several million cubic feet of gas came into the hole unexpectedly and ignited, burning the rig.

Western Kansas Oil & Refining Corporation staked location for Taylor 1, SEc SW 6-27s-12e, some 13 miles southeast of Eureka Springs in Greenwood County. The new test is 3½ miles east of production in the Climax pool, near the town of that name, and is one location north of an old dry hole which had a showing of oil in the Mississippi lime.

The Texas Company's Harper 1, NE SW SE 9-20s-3w, 4 miles north of Conway Springs in Sumner County, topped the Siliceous lime at 3208 feet and was drilling ahead below 3625 feet, seeking the top of the Mississippi lime.

E. B. Shawver and Stelbar Oil Company's Rothrock 3, NEc NW 4-32s-1w, the farthest southeast well in the Wellington pool of Sumner County, was completed for 1040 barrels of oil from the chat at 3700 feet after acid.

Alf M. Landon et al's McCaig 1, NEc SE 13-28s-6e, which extended the Kramer area of Butler County recently, swabbed 100 barrels of oil after shooting with 60 quarts at 2740 feet in the Bartlesville sand.

Atlantic Refining Company and Phillips Petroleum Company's McNaughton 1, NW NE NE 7-24s-13w, 2 miles southwest of St. John in Stafford County, topped the Lansing lime at 3560 feet and had a showing of oil in the core, taken from between 3590 and 3600 feet.

Empire Oil & Refining Company's O'Conner 1, NEc 17-24s-15w, drilled out the plug at 4131 feet and was preparing to perforate casing to test a showing of gas encountered at 4129 feet in the Siliceous lime. Casing was cemented at 4133 feet, the total depth.

Amerada Petroleum Corporation's Rush 1, NW SW SW 36-34s-6e, northeast of Maple City in Cowley County, was abandoned as dry at 3046 feet in the Mississippi lime, top of which was found at 3033 feet.

Gulf Oil Corporation's Rice Estate 1, SEc 21-32s-5e, an east offset to the discovery producer of the Frog Hollow pool, was completed for 264 barrels of oil from the Bartlesville sand at 3079 feet.

S. A. Murphy and Western Kansas Oil & Refining Company's Thome 1, SWc NW 19-28s-1w, southwest of Wichita in Sedgwick County, filled 600 feet with oil and fresh water from the chat at 3455 feet after drilling the plug.

Empire Oil & Refining Company's Kimel 1, NWc 4-29s-2w, near the town of Clonmel, in Sedgwick County, was drilling below 3716 feet in the Mississippi lime after getting a small show of oil in a core taken between 3696 and 3698 feet.

40 NEW STARTS

Wichita.—Drilling activity dropped somewhat in Kansas last week as 40 first reports were made, as compared with 61 for the previous week. Only 48 wells were completed, 11 below the past week. Thirty-two oil wells produced 41,495 barrels of oil, and 1 gas well made 51,000,000 cubic feet of gas. There were 14 dry holes and 1 abandoned location. Rice County led in locations, making 12; Russell County had 7; Ellis had 5, and there were 3 each for Barton and Reno counties. Butler and Stafford had 2 each, and 1 apiece was reported for Cowley, Osbourne, Rush and Sumner counties.

KANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Sinclair Prairie, Davidson 2, nw se se 4-16s-11w	150	3356
Missouri Valley O & G ,Peach 1, se se se 24-16s-14w	*	3443
Magnolia, Roesler 1, ne ne nw 1-18s-11w	1339	3282
Hilligoss et al, Isern "A" 4, ne se ne 12-20s-11w	627	3321
BUTLER COUNTY—		
National Ref., Sutter "A" 4, ne se nw 1-28s-6e	186	3185
CLARK COUNTY—		
Olson & Watchorn, Morrison 2, cnw ne 20-32s-21w	186	6539
COWLEY COUNTY—		
McKnabb, Community 1, cne nw 14-34s-3e	*	3880
Weldschmidt 1, sw sw nw 18-34s-6e	*	3520
Wentz & Amerada, Rush 1, nw sw sw 36-34s-6e	*	3046
ELLSWORTH COUNTY—		
Carter et al, Elizabeth 3, cnl ne 34-17s-9w	*	3200
Gulf Oil, Gizzell 2, nw sw nw 31-17s-10w	2080	3258
GREENWOOD COUNTY—		
Lauck et al, Gruber 1, nw nw nw 5-23s-13e	*	1838
HARVEY COUNTY—		
Olson & Shell, Nelson 3, sw sw nw 30-23s-3w	211	3377
McPHERSON COUNTY—		
McBride, Whitwright 7, sw nw sw 30-19s-1w	57	2979
RENO COUNTY—		
Barnsdall, Westgate 2-B, se ne se 19-24s-4w	1575	3385
Shaffer, Tucker 4, nw nw sw 20-24s-4w	450	3391
Bridgeport, Hiett 1, se sw ne 34-24s-4w	*	4031
Magnolia, M. Harris 4, nw se nw 9-26s-4w	1192	4059
Empire, Mauck 3, nw se nw 15-26s-9w	3340	4156
Gulf Oil, Reece 1, se se sw 10-26s-9w	3275	4143
National Ref., Sherman 8, se ne sw 16-19s-9w	47	3230
RICE COUNTY—		
Gulf Oil, S. Wendell 5, nw sw se 32-19s-10w	1335	3300
Republic Nat. Gas, Wendell 7, ne ne ne 32-19s-10w	1891	3285
Ramsey et al, Malone 1, nw nw ne 1-20s-10w	*	3310
Stanolind, Specht 13, ne nw se 6-20s-10w	2385	3311
Tatlock, Berscheidt "A" 4, ne sw sw 6-20s-10w	528	3291
Berscheidt "B" 7, sw ne sw 6-20s-10w	856	3306
Saco Oil, Sharpe 1, ne se ne 13-20s-10w	*	3342
Atlantic, Hughes "B" 1, se sw se 6-21s-7w	4196	3328
Patton "A" 2, nw nw ne 7-21s-7w	644	3348
Garden & Haines, Gossman 1, sw se nw 9-21s-7w	2831	3365
Theede 2, nw ne nw 14-21s-7w	1141	3391
Day et al, Manee 1, sw se se 21-21s-7w	*	2150
Manning, Martin et al, Mathes 1, se sw ne 27-21s-8w	*	3710
RUSH COUNTY—		
Northern Nat. Gas, Maulet 1, cse 12-18s-16w	¶51	3535
RUSSELL COUNTY—		
Empire, Vaughn 1, sw sw sw 17-14s-14w	1482	3034
Texas, A. Dumlar 2, ne nw se 1-14s-15w	736	3110
Empire, Hickey 1, se se se 25-14s-14w	1070	2970
Coralena Oil, Sellens 1-A, sw se sw 20-15s-13w	Icn.	abd.
Empire, Sellens 2, se sw sw 30-15s-13w	2305	3271
Phillips, Hoffman 5, nw se se 31-15s-13w	2635	3351
W. I. Southern Inc., Boomhower 6, nw se nw 32-15s-13w	960	3303
SALINE COUNTY—		
Ryan Consolidated, Wuerth 1, sw sw nw 28-14s-2w	*	3415
SEDGWICH COUNTY—		
Stanolind, Komarik 5, se se se 30-22s-11w	990	3580
STAFFORD COUNTY—		
Trigg & Vernon Oil, Andrea 1, se se se 4-23s-12w	*	3735
SUMNER COUNTY—		
Transwestern Oil, Murphy 6, sw sw se 32-31s-1w	460	3693
Murphy 7, se sw se 32-31s-1w	335	3708
WOODSON COUNTY—		
Reamer, Corn 1, ne ne ne 31-26s-15e	*	1825

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH AND WEST TEXAS

Shallow high-pressure gas found in Gaines County.

* * *

Third Ordovician producer for Sand Hills field.

* * *

Several shallow Young County Discoveries.

Midland.—Appearance of high pressure gas production from shallow horizon drilled by a northwestern Gaines County wildcat commanded attention in the north portion of the Permian Basin the past week. Amon G. Carter, Fort Worth publisher, and Continental Oil Company's A. L. Wasson 1, SW SW NW Section 48, Block A-X, PSL Survey, about 14 miles west of Seagraves, logged air pocket at 2940-50 feet, and encountered gas at 2979-3002 feet, carrying strong odor. The well threatened to blow out while using 12-pound mud in deepening to 3092 feet, where operations were halted to cement a protection string of 7-inch pipe. Gas was found in the Yates sand section. Wasson 1 logged top of anhydrite at 2070 feet, with an elevation of 3549 feet, and based upon this marker it is about 135 feet higher structurally than a 5224-foot failure drilled on the E. H. Jones tract, 4 miles to the southeast. T. J. Drilling Company, Dallas, has contract to drill Wasson 1 to 5200 feet.

Two Hockley Tests

Two new wildcats for Hockley County are involved in recent lease contracts made by independents since the discovery of oil production in the southwest corner of the county by The Texas Company et al's Bob Slaughter 1, Labor 83, League 38, Zavalla County School Lands. Slaughter 1 failed to attain complete water shut-off in plugging back from 5030 feet to use acid in saturated lime at 4980-5023 feet. The well is capable of flowing by heads when agitated, and is due to make a commercial producer. A. R. McElreath and F. W. Suggett, Fort Worth, have contracted to purchase, subject to title approval, lease on about 1050 acres out of the Slaughter ranch, offsetting the above discovery block on the east. This purchase involves the payment of a bonus of $60.00 per acre, one-half cash and the balance from production, and the drilling of a test to the dolomite.

R. F. Duggan et al assumed 5500-foot drilling obligation in obtaining lease on a 10,000-acre block out of the Yellow House Land Company's ranch, northern Hockley County, and have made location near center of Labor 11, League 718, Capitol Syndicate Lands. Immediate drilling of a second test in Terry County is in prospect through the efforts of R. L. Foree et al. Location has been made on the Pool tract, C NE Section 54, Block D-11, PSL Survey. Hugh Corrigan, Midland, and associates have made progress in financing deeper drilling operations on the southern Terry County wildcat drilled by W. L. Pickens et al on the J. B. Lewright tract, and temporarily abandoned after encountering sulphur water at 4938-4975 feet, with an elevation of 3185 feet. Pickens et al contracted to assign ownership in the test and a portion of the surrounding acreage to Corrigan, who in turn sold ¼ interest to A. W. Cherry et al.

Drilling is slated to be resumed shortly with cable tools by R. S. Bond, L. C. Harrison and E. E. Fogelson's Wm. Cameron 1, northeastern Cochran County wildcat, after halting at 4515 feet to set 7-inch pipe. It is located in Labor 1, League 85, Greer County School Lands. Top of brown lime was logged at 3760 feet, or 60 feet below sea level. Using this marker, it is 440 feet higher structurally than the lone oil producer in the southeast portion of the county, but is slightly lower structurally than Roy A. Westbrook et al's Slaughter 1, located 9 miles west by north, which was abandoned at 5339 feet, with first sulphur water at 4822 feet.

W. M. Blevins, Tom N. Sloan et al, Midland, have made location for W. W. Barber 1, NW NE NE Section 19, Block A-28, PSL Survey, extreme southwest corner of Gaines County. It is 6 miles northeast of a small oil well in process of completion in New Mexico. Wm. F. Hanagan et al have contracted to drill W. F. Scarborough-Llano 1, C NE Section 16, Block A-26, PSL Survey, northwestern Andrews County. Both prospects are supported by subsurface control through nearby dry holes.

Good Goldsmith Completions

Heavy initial yield was recorded by two completions for Gulf Oil Corporation on opposite sides of the Goldsmith field, Ector County. C. A. Goldsmith 14, C NW Section 5, Block 44, T-1-S, west outpost, earned a potential of 3000 barrels of 36.5 graity oil, based on flow during last half of 12-hour gauge after using acid at 4240 feet. This company's Goldsmith 15, NWc NE Section 3, offsetting a pumper, was given a potential rating of 2876 barrels oil and 4,000,000 feet of gas after using acid at 4190 feet. Goldsmith 13, C SE Section 10, did not fare so well because of 52 percent water showing up after using acid, and has plugged back to 4205 feet. Atlantic Refining Company's H. E. Cummins 1-B, NW NE NW Section 24, Block 45, located in northwest portion of the field, failed to flow after nitro shot and acid in lime at 4250 feet, and will be placed on pump.

Atlantic Refining Company's Foster 1, first completion for the company in the Foster field, Ector County, flowed 275 barrels initial after 400-quart shot at 4060-4190 feet. It is credited with being the first completion for the field to use rotary for drilling in.

Atlantic Refining Company's Fred Leck 11-B, an inside location for the Henderson field, Winkler County, taxed the capacity of its 2½-inch tubing by averaging 235 barrels of oil per hour for 4 hours from dolomite at 3060 feet.

Young County Discoveries.

Wichita Falls.—Young County recorded lime and shallow sand discoveries the past week. C. V. Welch et al's A. B. Street 1, Mary E. Criswell Survey A-1772, located in the southwest portion of the county and on a line between the South Bend and Vick-Graham fields, flowed over the crown block after using 8000 gallons of acid solution in lime at 3380-3460 feet, and bridged before potential gauge was completed. It is northeast of a failure drilled more than a decade ago by New Domain Oil & Gas Company in the southeast corner of the G. S. Fair Survey. The latter logged oil showings before issuing plugging orders at 3754 feet. Humphreys Corporation's Griffin 1, J. Parham Survey, originally tested gas with show of oil in lime at 3357-63 feet, and made 12,000,000 feet of gas when deepened to Marble Falls zone at 4144-45 feet in 1927.

Shallow strike for the north central portion of Young County was made by S. S. Alexander Oil Corporation's Mrs. K. D. Clark 1, NWc S½ NE Section 209, about 2½ miles southeast of Olney. The well pumped 32 barrels of oil in 9 hours after plugging back a foot. It is producing from sand at 845-52 feet, and is 1¾ miles northeast of a pool opened in 1929 from the same sand zone.

A. A. Lander Inc.'s E. W. Forrester 1, northwestern Denton County wildcat and first oil producer for the county pumped 80 barrels of 40 gravity oil, including head, during 20½ hours. It is producing from sandy-lime at 1647-1652 feet. This strike is about 1½ miles northwest of a small gasser recently completed at 1957 feet by Bolivar Drilling Company. The latter was the first gas completion for the county.

VAN ALLOWABLE UP

Austin.—The Railroad Commission has issued an order effective April 11, increasing the allowable for the Van field by 3000 barrels daily. This resulted in a total field allowable of 35,681 barrels daily.

Third Ordovician Well

San Angelo, Texas. — Natural flow of 150 barrels of oil er hour from Gulf Oil Corporation's W. N. Waddell et al 4, C SW NE Section 4, Block B-27, PSL Survey, third Ordovician oil completion for the northwest portion of the Sand Hills field, Crane County, reestablishes this deep lime horizon as a potential source of important oil and gas supplies in the Permian Basin. Prior to the above strike, the only attractive production from the Ordovician in the district was in the partially depleted Big Lake field, Reagan County.

Preliminary gauge given Gulf Oil Corporation's Waddell et al 4 after removing drill pipe at 6014 feet amounted to 150 barrels of pipe line oil the first hour and 127 barrels the next 45 minutes through 7-inch pipe cemented at 5800 feet, with 450 pounds back pressure. Volume of gas was estimated at 2,300,000 feet daily, and apparently void of sulphur content.

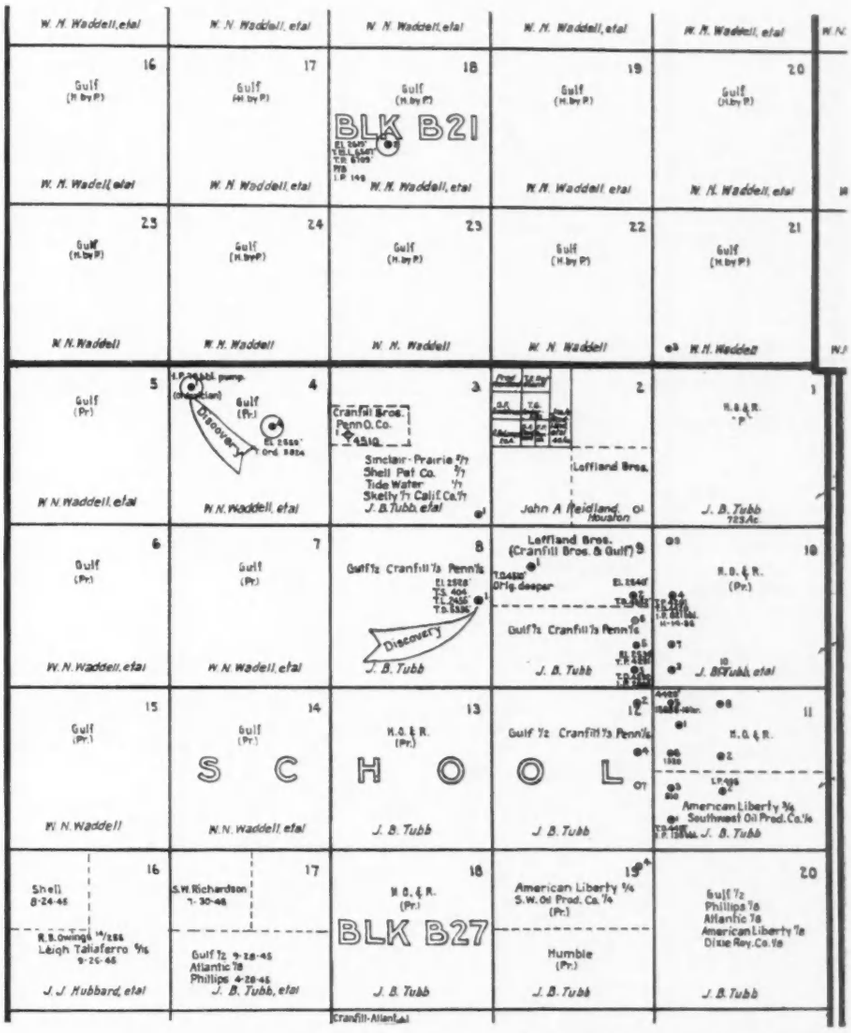
Production during the first 3 hours amounted to 283 barrels of pipe line oil, testing 47.6 gravity at 90 degrees temperature. It was then shut in to run tubing for proration gauge.

Prolific flow of oil was obtained from soft dolomite lime at 6000-6009 feet, tentatively identified as the contact point of the Simpson, or middle Ordovician, and the Ellenberger lime section. The well was tested originally through tubing in Simpson sand and lime zone at 5824-5989 feet, and flowed 82 barrels of 43 gravity oil in 19½ hours, with gas volume rated at 4,000,000 feet daily. The hole was deepened using oil for circulation, when this gauge failed to fulfill expectations. Formation cores recovered above 5989 feet showed lime, and gave rise for the report the well had entered the Ellenberger.

In the event further study of cores and cuttings place top of the Ellenberger lime at 6000 feet, or 3441 feet sub-sea, the lime takes an abrupt drop to the northwest. Gulf Oil Corporation's Waddell et al 1, C NW NW Section 4, slightly more than ½-mile to the northwest of the big producer, logged top of Simpson at 5980 feet, or 3426 feet below sea level, and top of Ellenberger at 6316 feet, or 3762 feet sub-sea. The latter formation, carrying sulphur water, was penetrated to 6450 feet. The well was plugged back to 6317 feet for shot and pumped and flowed 105 barrels of 34.7 gravity oil initial. The company's Waddell et al 2, located 1½ miles northeast of the first deep producer, logged top of Simpson at 5995 feet, or 54 feet structurally lower, and also showed water in Ellenberger at 6507-6709 feet. It was plugged back to 6186 feet for a small pumper. Correlation of the Ordovician markers credited to the three wells reveals that the structure is fairly flat between the first two and that Waddell et al 4, which is the nearest to Permian lime producers, is unreasonably high and apparently has a short section of sand in the Simpson, or middle Ordovician.

Gulf Has Big Block

Gulf Oil Corporation's Waddell et al 3, SWc Section 21, Block B-21, located 1½ miles north of regular production, is slightly higher on structure than the nearest well in the Permian zone, and was drilling at 3918 feet late last week. It is being drilled primarily for Permian production, but is carrying large hole and avoiding use of cement behind casing to be prepared to continue to Ordovician. Gulf Oil Corporation holds lease on an almost solid block of 42,000 acres to the north, northwest and west of the Sand Hills field, but the section adjoining the site of its new strike to the east is held by 6 companies, retaining deep rights in promoting a unit test in the southeast corner of the section. This unitized test made a small pumper and perpetuated the leases.



Map—Courtesy Southwest Mapping Company, Fort Worth.

Natural flow of 150 barrels of high gravity oil per hour from Gulf Oil Corporation's W. N. Waddell et al 4, third Ordovician lime producer for the northwest portion of the Sand Hills field, Crane County, will encourage prospecting on a greater scale for this deep lime horizon in West Texas. Relative position of the deep wells, indicated by circle, to those producing from the lower Permian near the 4400-foot level in the field proper is shown.

Sinclair Prairie Oil Company's University 1-27, SE SE NW Section 12, Block 35, northern Crane County semi-wildcat situated between the Waddell field and the Judkins field, Ector County, encountered sulphur water in lime at 3605-3623 feet, with an elevation of 2797 feet, and will be plugged. Gulf Oil Corporation's University 1-B, SWc SE Section 11, Block 35, located slightly more than ½-mile northwest of production in the Waddell field failed to respond to acid treatment at 3622 feet, or 838 feet sub-sea. In all probabilities it will encounter water if deepened, thereby omitting any chance of the area being linked with the Judkins field.

Albert H. Flaherty & Son, Midland et al's J. C. Cunningham 1, northeastern Pecos County wildcat, 5½ miles southeast of Girvin, failed to respond to acid treatment of saturated lime at 2244-2249 feet, and is awaiting second treatment. It pumped 18 barrels of 37.6 gravity oil early in April prior to acidization. Location is in NWc SW Section 25, Block 11, H&GN Ry. Survey.

Plan Three Tests in Howard

John I. Moore, Midland, et al have assumed a three-well drilling obligation on semi-wildcat acreage in southwestern Howard County, and will start operations shortly on King 1, C NW Section 43, Block 35, T. & P. Ry. Survey, T-1-S, Glasscock County. The latter is in the extreme northwest corner of the county, and on a block that extends into Martin and Midland Counties. The Howard County tests will be drilled west and south of two 10-barrel pumpers operated by Continental Oil Company, and on a block of 8800 acres obtained for the drilling of a test in NWc Section 23, and SWc NW Section 19, Block 34, T-1-S, and in NEc Section 31, Block 33, T-1-S, T. & P. Ry. Survey. Continental Oil Company's Harding 1, C SE Section 19, Block 33, proved the area for production after shot in 3100-foot lime in May, 1927,

with a 140-barrel pumper, and Brindley 1, C SE SE Section 18, Block 33, was completed as a 60-barrel pumper in June, 1931. Both tests drilled into sulphur water, and were plugged back. Continental Oil Company later surrendered its leases in the area, except 40 acres around each well. Both are served by Magnolia Pipe Line Company.

Prospecting in Ector County along favorable production trends will be undertaken shortly by independents. Dalport Oil Corporation, Dallas, and Buffalo Oil Company, Tulsa, have been assigned lease on Section 15, Block 44, T-2S, T. & P. Ry. Survey, by John W. Naylor, Fort Worth, and will drill in SWc SE Section 15. In the event production follows, Naylor will receive ⅛ over-riding royalty, aggregating $6400, then 1/16 interest until the cost of the well is amortized. After these obligations are fulfilled Naylor will have 1/3 working interest. Broderick & Calvert's J. E. Parker 1, NWc Section 15, showed for a small producer after light nitro shot in saturated lime at 4370-95 feet, but was abandoned in October, 1932, because of low crude prices and absence of pipe line connection. Lew Wentz has contracted to drill a test in NEc Section 28, Block 44, T-2-S, according to reports, and has a second project under consideration. These tests are seeking a northwest extension of the Harper field.

Taylor County, with 11 wells pumping 65 barrels of high gravity oil daily from lime horizons, has lately moved into the active wildcat column. Six or more tests are underway on blocks assembled by independents. Forest Development Corporation, Abilene, has been assigned lease on Blocks 18 and 26, Wm. R. Willis Survey No. 122, aggregating 160 acres, about ½ mile southwest of production, for the drilling of a 2500-foot test. Shell Petroleum Corporation made the sublease, retaining an over-riding royalty and mineral rights below 3500 feet.

BENNETT HEARING

Austin.—The Texas Railroad Commission has recessed until April 20 its hearing on the Bennett field, Yoakum County.

At a hearing in Austin Thursday, operators were unable to agree on a spacing program. The generally acceptable plan was one well to 20 acres, but several different methods of attaining this end were presented.

The plan advocated by Texas Pacific Coal & Oil Company was to allow 1 well on each 40-acre unit, spaced 330 feet from lease lines. C. E. Yeager, representing this company, proposed to develop the field on this basis for two years, then adjust the spacing regulations.

Gulf Oil Corporation objected to this program, contending that the result would be one well to 10 acres.

Two plans are to be presented next Tuesday at the hearing if details can be completed in the short time remaining.

Because testimony on the probable drainage area of a well was so meagre, it is possible the Commission will decline to enter rules now.

FIELD TRIP

West Texas Geological Society sponsors study

El Paso.—The West Texas Geological Society will sponsor a spring field trip to the Hueco and Franklin Mountains of West Texas during the weekend of April 24 and 25. The party will assemble at the Hilton Hotel in El Paso on the evening of Friday, the 23rd, for registration. There will be a nominal registration fee charged to cover the cost of guidebook and maps.

Also on Friday evening the Texas Academy of Science is dedicating its new museum in El Paso and doubtless many geologists will wish to attend the ceremonies.

The party will leave El Paso at 8 a.m. (Mountain time) Saturday for a full day's trip to examine the Paleozoic section of the western Hueco Mountains. Sunday morning the party will study the section in Franklin Mountains north of El Paso. This trip will be concluded in the early part of the afternoon. Following this, there will be a short optional trip to the Jurassic exposures in the Malone Mountains.

All geologists are cordially invited to make this trip. It is advisable for all those who wish to attend to make reservations well in advance with the Hilton Hotel, El Paso.

TRANSPORT BILL

To permit movement of all Texas stored oil

Austin.—A bill to move all crude oil in storage in Texas has been introduced in the Texas Legislature by Representative W. E. Pope of Corpus Christi.

The bill would require the Texas Railroad Commission to issue a tender on all oil which was in storage prior to March 1, 1937. Pope estimated that 15,000,000 barrels would be affected.

He would have the oil inventoried, described, classified, located, and tendered within 20 days after the law became effective. The State Comptroller would then issue a certificate which the Railroad Commission must honor with a tender; however, the commission would not have to allow movement of more than 100,000 barrels daily.

The oil and oil products produced prior to March 1, 1935, could be moved on payment of taxes plus a penalty of 10 cents per barrel.

Oil produced between March 1, 1935, and March 1, 1937, would be subject to a higher penalty based on gravity. Oil with a gravity ranging from 37 to 40 would be taxed 30 cents per barrel; below 37 gravity, the tax would be 28 cents. A penalty of 22 cents would be placed on reduced crude and any oil from which part of the gasoline content had been removed. Oil of more than 40 gravity would be penalized at 31 cents a barrel. Fuel oil would pay a penalty of 19 cents per barrel, and refined products of 45 gravity and higher would be penalized at 37 cents per barrel.

The bill also provides for refunds or supplementary payments of taxes and penalties on oil which, when moved, showed to be more or less than the amount certified by the comptroller. The tax must be paid regardless of the gravity.

Because the session is so far advanced, it is doubtful if such a bill could be passed.

AGUA DULCE RULES

Austin.—The Texas Railroad Commission has issued field rules for drilling below 4000 feet in the Agua Dulce field in Nueces County. Two strings of casing must be set, including a 1500-foot surface string, and an oil string cemented back to a point within 4000 feet of the surface. For wells producing from 5000 to 7000 feet, extra heavy fittings are required, and water wells must be drilled at least 150 feet from wells producing oil and gas.

The commission rules require regular mud checks when drilling below 200 feet, and the maintenance of mud weighing at least 11½ pounds per gallon with a viscosity of no more than 35 seconds.

295 TEXAS PERMITS

Austin.—The Texas Railroad Commission aproved last week permits for drilling 295 new wells in Texas, 117 less than were allowed the week before.

Gulf Coast operators listed 64 permits, with 11 in Jefferson County. There were 54 locations from Southwest Texas, with 20 in Duval County.

West Texas reported 52 locations, including 15 in Winkler County and 13 in Ward County. There were 11 permits from the Panhandle.

There were 32 permits for wells in the East Texas field, including 18 in Rusk County, and 14 in Gregg County. There were 17 permits from the East Central Texas district.

North Texas operators reported 47 locations with 17 in Jack County, and there were 18 from the West Central Texas district.

SAXET SPACING

Austin.—A hearing to fix spacing rules for wells producing from sands below 6000 feet in the Deep Saxet field has been recessed by the Texas Railroad Commission.

This action was taken after Maston Nixon, representing the Southern Minerals Corporation, advised the commission that he believed delay would result in the presentation of the program approved by all of the operators.

V. E. Cottingham, director of production for the commission, stated that the hearing would be held after another notice has been issued.

ACCOUNTANTS MEET

Tulsa.—The Petroleum Accountants Society will hold its next meeting April 23 in the Mayo Hotel in Tulsa. Guest speaker will be C. P. Parsons of Halliburton Oil Well Cementing Company, who will discuss fighting oil and gas well fires, directional drilling, and other methods employed. Parsons' talk will be illustrated with moving pictures taken by himself.

A. A. P. G. IN 1938
To hold annual meeting in New Orleans

New Orleans.—The twenty-third annual meeting of the American Association of Petroleum Geologists will be held in New Orleans, Louisiana, in March, 1938. A large attendance is expected in New Orleans. In Louisiana and the surrounding states of Mississippi, Arkansas, Oklahoma and Texas, live the majority of the members of the association. The fifteenth annual meeting was held in New Orleans in 1930. At that time the total membership of the association was 2285; now it is 2353. At that time the total registered attendance in New Orleans was 980; at Los Angeles, March, 1937, the total attendance was 1062.

The A. A. P. G. has two affiliated societies in Louisiana, one at Shreveport and one at Lake Charles.

The officers of the Shreveport Geological Society are: President, Shapleigh G. Gray, The Texas Company; vice president, H. K. Shearer, The Hunter Company, Inc.; secretary-treasurer, C. R. McKnight, Arkansas Fuel Oil Company.

The officers of the Southern Louisiana Geological Society at Lake Charles are: President, C. I. Alexander, Magnolia Petroleum Company; vice president, J. S. Kirkendall, Amerada Petroleum Corporation; secretary, W. R. Canada, Stanolind Oil & Gas Company; treasurer, Baker Hoskins, Shell Petroleum Corporation.

The officers of the A. A. P. G. are: president, H. B. Fuqua, Gulf Oil Corporation, Fort Worth, Texas; vice president, C. L. Moody Ohio Oil Company, Shreveport, Louisiana; Ira H. Cram, secretary-treasurer, The Pure Oil Company, Tulsa, Oklahoma; editor, W. A. Ver Wiebe, University of Wichita, Wichita, Kansas.

PURCHASING AGENTS
Plan elaborate program for annual convention

Pittsburgh.—Plans are beginning to take shape for an elaborate program to feature the Twenty-second Annual International Convention of the National Association of Purchasing Agents which is to be held in the William Penn Hotel at Pittsburgh, Pa., on May 24 through May 27.

Between 1,200 and 1,400 members are expected to attend this convention which will open with an "Early Birds" dinner on Sunday evening, May 23, in the William Penn Hotel. Complete room facilities of the hotel had been booked more than two weeks ago and the overflow rapidly is filling up other large downtown hotels, setting a record for such early reservations for a convention.

The beautiful Chatterbox and subfloor of the William Penn Hotel will be resplendent with 115 booths and displays of the Inform-A-Show. This show will represent many industries of the country and is expected to be the most educational and spectacular in the history of the Purchasing Agents' Association. Many concerns already having revealed plans for stupendous and colossal displays.

Some of the country's outstanding leaders will be brought to Pittsburgh to address sessions of the convention, Thomas D. Jolly, chairman of the program committee for the convention and also president of the Pittsburgh unit of the N.A.P.A. (general purchasing agent for the Aluminum Company of America), has reported.

NORTH TEXAS
Completion

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
Golding & Cochran, H. E. Brown 14, sec 6	15	1186
H. E. Brown 15, sec 6	150	1185
G. B. Hamilton 3-A, sec 6	26	1151
H. S. Gray et al, W P. Ferguson 1, sec 1	*	670
A. P. Nicholson et al, H. O Prideaux 3	*	645
G. J. Scholl et al, Claude Cowan 2, blk 6	*	1102
White & Duncan, J. L. Webb 16, blk 1	*	702
CLAY COUNTY—		
Metzner & Burns, Thornberry 16, blk 6	4	112
COOKE COUNTY—		
F. W. Merrick, Inc., Knabe 35, blk 12	*	1617
A. D. Robinson et al, J. H. Otto 3-A, blk 5	10	812
JACK COUNTY—		
Brazos River Gas Co., S. A. York 7	185	2958
Cato Oil Co., J. A. Raley 4	379	3001
C. Newburn et al, M. J. Powell 1	*	474
Panhandle Ref. Co., M. B. Cook 4	149	2972
MONTAGUE COUNTY—		
Gibson-Jennings, Inc.-Sinclair Prairie, Holt 7	230	1703
WICHITA COUNTY—		
L. T. Burns et al, Waggoner Bros. 21, blk 4	*	900
W. B. Omohundro et al, S. P. Gibson 9, blk 302	100	1914
Perkins-Cullum Oil Co., S. B. Burnett 24, sec 5	20	1575
Pois & Schultz, Foster-Allen 3-C	100	1279
Rubsam & Hunter, W. D. McClure 1, sec 5	*	590
H. L. Rugeley et al, Waggoner Est. 14, blk 148	*	1100
WILBARGER COUNTY—		
Humble, Waggoner Est. 22-H, sec 46	2000	3076
Phillips Pet. Co., Waggoner Est. 5-FF, sec 42	49	2525
The Texas Co., Waggoner Est. 433, sec 4	60	1980
YOUNG COUNTY—		
S. S. Alexander et al, Van Hemert 1, sec 352	*	751
Cox & Perkins, H. King 1, sec 183	*	1005
E. R. Hanson et al, J. O. Shatton 1	5	548
I. B. Perskey et al, H. Haygood 5, sec 237	*	1005
E. C. Reed et al, J. L. Langston 1, sec 1485	*	570

*Failures; †Junked; ¶Million cu. ft. gas.

TEXAS PANHANDLE
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
GRAY COUNTY—		
Champlin Ref. Co., H. B. Lovett 1-B	*	3578
Gulf, E. G. Barrett 7	626	3290
T. W. Catlin 4-B	816	3189
Phillips, Birdie E. McKinney 1	523	3265
Sinclair Prairie, A. G. Post 1	277	3274
HUTCHINSON COUNTY—		
Phillips, E. T. Timms-J. W. Moore 6	128	3152
Shell, B. Wisdom 2	525	3184
Skelly-Henry L. Cabot, Yake 1	¶18.2	2817
Harry Stekoll et al, G. A. Whittenburg 6-D	225	3080
Belle Wisdom 6	20	3140
Timms-Robinson Oil Corp., J. W. Moore 5	640	3135
MOORE COUNTY—		
Phillips, J. B. Booker 1	¶71.2	3194
Shamrock O&G Co., F. W. Becker 1	¶128	3484
WHEELER COUNTY—		
King Oil Co., H. L. Willingham 1	¶4 & 30	2255
H. L. Willingham 2	50	2237
C. T. Palmer et al, R. Pugh 1	¶59.3	2265

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANDREWS COUNTY (Wildcat)—		
Geo. F. Getty, Inc., G. E. Moxley 1	*	4802
CRANE COUNTY (McCamey Field)—		
Donnelly-Sindorf Drl. Co., L. Taylor 1-B	705	2130
E. P. Cravens et al, Hughes-Gibbs (Conoco) 4	385	2287
Bert Fields et al, Hughes-Gibbs (Conoco) 4	784	2257
Jim Rush-Rushwold Oil Co., Hughes-Gibbs (Conoco) 3	575	2280
CRANE COUNTY (Waddell Field)—		
R. H. Henderson et al, W. P. Edwards 1	*	3654
CRANE COUNTY (Wildcat)—		
Sinclair Prairie, University 1-27	*	3623
ECTOR COUNTY (Foster Field)—		
Atlantic Ref. Co., H. C. Foster 1	275	4190
Sinclair Prairie, J. L. Johnson 2-A	134	4345
ECTOR COUNTY (Goldsmith Field)—		
Atlantic Ref. Co., W. F. Cowden 2	1324	4260
H. E. Cummins 1-C	616	4240
Gulf Oil Corp., C. A. Goldsmith 14	3000	4240
C. A. Goldsmith 15	2876	4190
Humble, W. F. Cowden 3	767	4270
Landreth Oil Corp., C. Scharbauer 1-G	684	4235
Manson Oil Co., H. E. Cummins 2	788	4250
Phillips Pet. Co.-Pure Oil Co., C. Cowden 9	344	4152
Shasta Oil Co.-J. L. Greene, C. Scharbauer 1-A	1876	4223
ECTOR COUNTY (Judkins Field)—		
Shell Pet. Corp., University 2	238	3700
ECTOR COUNTY (North Cowden)—		
Tide Water Associated, A. W. Wight 2	1162	4298
GLASSCOCK COUNTY—		
Continental Oil Co.-Group 1 Oil Corp., Settles 28-S	432	1243
JONES COUNTY—		
Danciger O&R, Inc. et al, H. Dorsey 5	*	2254
Fain-McGaha Oil Corp., A. J. Swenson 1	*	2008
E. A. Ungren-A. J. Frazier, H. Dorsey 8	1200	2216
PECOS COUNTY (Pecos Valley Field)—		
Union Oil & Mining Co., Magnolia 1-A	10	1850
PECOS COUNTY (Wildcat)—		
Humble, J. H. Tippett 2	*	1204
Young Pet. Corp., Bailey 1	*	2081
UPTON COUNTY (McCamey Field)—		
British-American Oil Prod. Co., J. W. Robbins 1	989	2244
J. W. Ellis et al, J. W. Robbins 9-B	818	2250
Homestead O&G Co., Ed. Hughes-Pure 4	†	780
WARD COUNTY—		
Amerada Pet. Corp., W. W. McDonald 1	600	2454
Black & Heidrich, M. E. Snelson 2	92	2222
W. J. Dobbs Oil Co., A. F. Bray-Gulf 2-B	*	2582
J. P. Kittrell et al, F. R. Stewart 3	173	2465
Hadlow & Clawson, Allen-California 1	*	2592
Pat Hill et al, Clements-Sun 14	272	2331
Sinclair Prairie, G. P. Hill 8	308	2505
Skelly Oil Co., Hathaway 6	6634	2582
Stanolind, W. E. Cannon 3	*	2501
WINKLER COUNTY (Emperor)—		
Emperor Oil Co.-S. J. Iverson Tool Co., Halley-DeSpain 1	1054	2858
WINKLER COUNTY (Henderson)—		
Atlantic Ref. Co., Fred Leck 11-B	10,000	3060
WINKLER COUNTY (Kermit-Sayre)—		
Atlantic Ref. Co.-Joe C. Maxwell, J. C. Lovett 3	776	3139
J. C. Lovett 5	786	3150
Bert Fields et al, O. Clapp-Pure 5	2082	3092
Gulf Oil Corp., Daugherty 29	858	3020
Humble, N. R. Colby 2-B	486	3150
J. F. Howe 18	2143	3010
W. A. McCutcheon 5	515	3010
Magnolia, J. B. Walton 68	386	2965
J. B. Walton 69	402	2971
Sayre Oil Co., J. F. Howe 7-C	948	2990
Sinclair Prairie, Walton 15-B	1089	2975
Walton 16-C	1440	2975
Tide Water Associated, Walton 14	952	2940
WINKLER COUNTY (Keystone)—		
J. R. Sharp et al, W. A. McCutcheon 2	460	3430
WINKLER COUNTY (Scarborough)—		
Illinois Oil Co., W. F. Scarborough 1-D	47	3074

*Failures; †Junked; ¶Million cu. ft. gas.

EAST TEXAS

Early decision due on Long Lake's first deep test.

* * *

Grapeland Woodbine wildcat tests 15,000,000 feet.

Tyler.—Trinity tests underway in the East Texas basin area failed to yield any important developments the last week. An early decision is due from Tide Water Associated Oil Company and Seaboard Oil Corporation's Monnig 7, first deep project for the Long Lake field, Anderson County, as it has reached the lower Glen Rose zone in drilling to 8821 feet. No showings have been recorded. Thinning of the massive anhydrite section, logged at 8643-8753 feet, with an elevation of 233 feet, is considered a favorable development. The Paluxy sand series, logged at 7000 feet, was void of production. Roeser & Pendleton, Inc.'s Bowyer 3, third Trinity test for Long Lake field, has not progressed to an interesting depth. Tom Hunter, American Liberty Oil Company et al's Gage 1, located on the Blackfoot structure, northern Anderson County, logged first anhydrite at 8080 feet, and was drilling in shale and lime at 8300 feet.

Van Test Salt Water

Humble Oil & Refining Company's Riggs 1, northeast Van field Trinity project, tested salt water at 4664 feet, after entering Paluxy series at 4645 feet, or 4179 feet sub-sea. The hole was 9 degrees off, and has been plugged back to about 40 feet below 9-inch pipe cemented at 3818 feet to whipstock.

Pure Oil Company's W. B. Kendrick 16, Mexia deep test, was drilling in Woodbine at 3000 feet. C. F. Lytle et al's Simmons 1, first Trinity project for Wortham field, was drilling at 2900 feet.

In Hunt County, Penn Oil Corporation and Fox Wood's Parrish 1, logged top of Woodbine at 3462 feet, according to log, and was drilling at 4650 feet. Henderson County's original Trinity test being drilled by Tide Water, Seaboard and Humble Oil & Refining Company on the Opelika structure, logged top of anhydrite at 6939 feet, with an elevation of 392 feet, and was drilling at 7060 feet.

Water shutoff was accomplished by American Liberty Oil Company et al's Bean 1, second Woodbine test for the Grapeland area, northern Houston County, in perforating casing at 6018-36 feet, and the well tested 15,000,000 feet of gas through ½-inch choke. It was originally carried to 6253 feet and into the water zone before landing pipe.

Placid Oil Company et al's J. E. Elliott 1, prospective Woodbine oil and gas producer for the Procella area, northeastern Houston County, was coring at 6270 feet, and will continue to the Georgetown lime before running pipe and perforating opposite Woodbine sand at 5872-79 feet.

In Wood County, B. F. Phillips et al's Mrs. L. E. Pritchett 1, about 4½ miles southwest of Winnsboro, entered Woodbine series at 5080 feet, with an elevation of 542 feet, and was in salt water sand at 5126 feet.

No fluid level in Talco outpost.

Talco, Texas.—Preliminary production test given Magnolia Petroleum Company's J. A. Chapman 1, NWc 341-acre lease, Geo. Dyer Survey, 1200 feet east of nearest production in the Talco field, indicates that a normal fluid level is absent. The well fills 50 to 60 feet with oil in 7-inch pipe when swab is run, and will be placed on pump. Top of Paluxy saturation was logged at 4230 feet, or 3880 feet below sea level, and the hole is bottomed at 4305 feet. It is in close proximity to the water level for this area.

Drilling rush at Talco is definitely subsiding, although routine developments will be carried on at a moderate rate indefinitely. Majors prefer to hold off on drilling unnecessary locations, and the enthusiasm of the independents has been diminished by reduced well allowables and expense involved in pumping large quantity of water with the oil yield of a majority of the completions. Production during the week ending April 5 averaged 22,000 barrels daily from 270 wells. Return of warmer weather has enabled Humble Pipe Line Company, owner of the only trunk line outlet, to boost its deliveries to Louisiana to a new peak level of 13,834 barrels daily.

Numerous small operators in the field have financed the bulk of their development costs through the assignment of oil payments. Drilling contractors have specialized in making turnkey contracts on this basis. Recent completion on a church lot within the townsite was drilled by an East Texas producer and contractor for $20,000 oil payment, payable from 5/8 of the production.

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Amerada-Deep Rock, Stovall 31 (193.86-ac)	3600	3626
Atlantic, Arnold 10 (35-ac)	250	3725
Gulf, Stone 16 (107.58-ac)	4000	3803
Humble, Kangerga 62-A (333¼-ac)	2500	3780
T. A. Johnston-John Owen, Tr., J. Jackson 11 (46.02-ac)	7000	3704
J. Jackson 12 (46.02-ac)	4600	3727
Magnolia, S. W. Moores 4 (36-ac)	5500	3680
Ohio, E. E. Moores 36 (201.4-ac)	1000	3719
Stanolind, M. O'Quinn 10 (80.15-ac)	7000	3804
E. R. Stewart-R. M. Egan, J. C. Bateman-Sun 6 (25-ac)	800	3755
Sun, W. D. Pace 1	*	3723
Texas Co., Cora Hanna 5 (20-ac)	1200	3643
H. H. Wegener (was Gant et al), Stone 5 (30.38-ac)	5000	3832
Wheless Oil Corp., Patterson 14 (172.64-ac)	550	3748
KILGORE AREA—		
Abercrombie-Harrison Oil Co., Brightwell 4-A (15-ac)	9200	3677
Delta Drlg. Co., L. D. Crim 6 (20-ac)	500	3658
L. D. Crim 7 (20-ac)	500	3530
Gen'l American Oil Co., W. G. Sexton 10-A (100-ac)	1200	3618
Gulf, W. Florence 20 (165.09-ac)	7200	3701
Lilly Oil Co. (was W. Mack), W. Dickey 4 (20-ac)	80	3710
Luling O&G Co., W. P. Brightwell 7-B (21.84-ac)	9000	3649
Magnolia, S. E. Brox 11 (70.32-ac)	7000	3665
Shell, P. M. Bates 14 (64.96-ac)	8000	3575
Southport Pet. Co., I&GN Ry. 4, Tr. No. 2 (4.3-ac)	800	3561
Sun, Hilburn-Loyd 28 (133.7-ac)	4500	3676
Tide Water Associated, Jack Bean 14 (85.6-ac)	4200	3790
Wheelock & Collins, D. Wells 4-A (120-ac)	500	3678
LONGVIEW AREA—		
Arkansas F. O. Co., Lathrop 10-B (58.82-ac)	5600	3612
Barnsdall-Sun, L. Bingham 17 (99.56-ac)	9600	3506
Deep Rock-Murphy, Pritchard 13 (105-ac)	10,500	3547
Fain-McGaha, W. A. Bauknight 10 (53.4-ac)	8800	3591
Gulf, J. H. Bozeman 19 (110.68-ac)	9800	3605
Humble, E. O'Byrne 13-B (104-2-ac)	4500	3674
Kewanee O&G Co., Fee 26 (168.77-ac)	11,000	3633
Manziel et al, H. P. McGaughy 1 (17-ac)	30	3719
T. K. Simmons et al, J. M. Evers 2 (75.7-ac)	240	3849
Stanolind, J. C. McKinley 55-B (84-ac)	6000	3657
Stanolind-Falcon, G. C. Cannon 2 (37-ac)	80	3600
Tide Water Associated, Nettleton 8-B (148-ac)	8000	3532
ANDERSON COUNTY (Long Lake Field)—		
Texas Co., W. P. B. Woodhouse 2 (406-ac)	1800	5278
FRANKLIN COUNTY (Talco Field)—		
Humble, Mrs. D. Reed 2 (80.94-ac)	415	4341
Magnolia, O. S. Maxton 3 (326.6-ac)	85	4299
HOPKINS COUNTY (Sulphur Bluff Field)—		
D. S. Hager, W. P. Luse, J. G. Reynolds 4 (200-ac)	900	4519
TITUS COUNTY (Talco Field)—		
B. G. Byars et al, W. T. Edwards 2-A	288	4297
Byrd-Frost, Inc., J. Hargrove-Gulf 1 (74-ac)	204	4251
Humble, A. P. King 29 (1053.36-ac)	262	4325
Yandell Rogers-Rozel Oil Corp., Christ Church 1, lot 3, blk 25	225	4349
CASS COUNTY (Rodessa)—		
Magnolia Pet. Co., Lewis & Wicks 8, Alex Archer sur	360	6055
R. W. Norton, Davis 3, H. Holbert	416	6000
Ohio Oil Co., R. P. Willis 16, SFIW sur	374	5993
Texas Co., N. A. Rambo 5, Cass County School Land sur	432	6093
MARION COUNTY (Rodessa)—		
Dunn & Fisher, Susie A. Chatten 1, A. De Los Santos Coy sur	¶6	5955
MARION COUNTY (Pine Island)—		
Sam Lanier, Lucey Rives 1, M. G. Noll sur	*	960
Semo Oil Co., Lucas 1, A. Castleberry sur	*	1125
H. C. Skidmore, A. Elrod 1, M. G. Noll sur	*	1065

*Failures; †Junked; ¶Million cu. ft. gas.

3 HAYSTELLITED BITS *drill* 4,536 ft.

.. no reaming necessary

IN a well at Tomball field, Texas, these three bits drilled from the 958 ft. level to a depth of 5,494 ft. in 103 hr. Bit No. 1 made 3009 ft. in 60 hr. Bit No. 2 in a little over 33 hr. made 1140 ft. Bit No. 3 drilled the final 387 ft. in 9½ hr. All three bits were hard-set with Haystellite inserts and faced with Tube Haystellite. No reaming was necessary before the casing was set. The hole was out-to-gauge all the way down.

This is typical of the results that you too can expect when you use Haystellite inserts and Tube Haystellite according to the simple procedures explained in "Haynes Stellite Products in the Oil Fields." This valuable 36-page book is available to you without cost or obligation. Write for a copy today.

PRODUCT OF A UNIT OF UCC UNION CARBIDE AND CARBON CORPORATION

HAYSTELLITE TRADE MARK

The cast Tungsten Carbide diamond substitute

HAYNES STELLITE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

Chicago - Cleveland - Detroit - Houston - Los Angeles - New York - San Francisco - Tulsa

General Office and Works—Kokomo, Indiana

Foreign Sales Department—New York City

Haynes Stellite Welding Rods and information on other Haynes Stellite Products also are available through the 42 apparatus shipping points of The Linde Air Products Company

SOUTH TEXAS

Third oil field established for Jackson County.

* * *

Three new oil fields are found in Mirando district.

* * *

La Blanca, Rio Grande Valley, extended 1½ miles.

Corpus Christi. — Jackson County's third oil field was definitely established by the Texas Company's T. N. Mauritz 1, Section 4, five miles southeast of Ganado, which was flowing at the rate of 65 barrels of oil and 1,250,000 cubic feet of gas per day through 3/16-inch choke from the lower Marginulina at 5080-5112 feet. The oil is 26.1 gravity. Pressures are 1625 and 1675 pounds on casing and tubing.

Jackson County has been a rather unsuccessful area in the past. Vanderbilt field, a Frio sand area, developed only a single producing well, while Mauritz field, about five miles from the new producer, has only two producers. Both fields have been extensively explored with poor results. Shell Petroleum Corporation last week established a second producer in the Mauritz field, being T. N. Mauritz 1-B, 1000 feet northeast of the discovery. It flowed 92 barrels of oil and 52 barrels of salt water in 24 hours through ⅛-inch choke in 24 hours, tubing pressure being 450 pounds. The production was from perforations at 5645-47 feet.

Heavy Drilling Campaign Presaged

Despite the poor showing of the area, the new discovery by The Texas Company paves the way to a heavy drilling campaign in Jackson County. Considerable geophysical work has been done during the past few months and leasing has been active. As far as The Texas Company discovery is concerned, the development in the new Ganado field should be rather conservative. This concern holds more than 6,000 acres in the immediate area.

On a potential test, I. J. Allen and Seaboard Oil Corporation's J. O. Chapman et al 3, Chapman Ranch field, Nueces County, flowed 89.5 barrels 41.8 gravity oil in five hours through ¼-inch choke with tubing pressure of 550 pounds and casing pressure of 700 pounds. It opened a new sand, likely in the Catahoula, at 5046-58 feet. The well, in Section 38 and ¼-mile east of the discovery, is 1400 feet shallower than the other producer in the field. Chapman 1-B, northeast of the same pool, was coring at 5450 feet.

Gregory district, San Patricio County, again sprang into prominence as Phillips Petroleum Corporation's Henry Schmidt 1, Section 81, four miles northwest of Gregory, set casing for production test. The wildcat had drilled to 7005 feet, ran electric formation tester and set pipe at 5560 feet. It will perforate in sand section between 5516-39 feet, where it showed gas and oil on drill stem test. Eleanor Oil Company's Green Estate 1, Williamson Survey, has been abandoned below 7305 feet.

Heyser Extension's Oil Yield Drops

Commonwealth Oil & Gas Company's W. H. Bennett 3, J. E. Galban Survey, which extended the Heyser field one mile north into Victoria County, began making an increased volume of gas, and oil output decreased to one barrel per hour through ⅛-inch choke, pressures mounting to 2000 pounds. The well previously had flowed at the rate of six barrels per hour through ⅛-inch choke, with pressures of 1400 pounds on tubing and 1700 pounds on casing. As the pressures increased, the gravity rose from 33 to 53 degrees. It is now being rigged up to core deeper from 5476 feet and a new completion will be attempted.

In Victoria County's Telferner prospect, Magnolia Petroleum Company is still attempting to complete Annie B. Wagner 1, Section 1, which is showing gas and wash water with a slightly oily spray through perforations at 2519½-24 feet. The test shows pressures of 350 pounds on tubing and 900 pounds on casing.

Barnsdall Oil Company's Kate J. Edwards 1-A, southwest offset to Edwards 1, on the Lamar prospect in Aransas County, was drilling ahead at 7461 feet, near the level in which the preceding well encountered an oil and gas showing. In the McCampbell field of the same county, Buckingham Oil Company and Edwin M. Jones' McCampbell 2-B, deep test, plugged back from 7546 feet, set casing at 7462 feet, perforated at 7350-60 feet, flowed little oil, some gas and salt water, with no tubing pressure and 600 pounds casing pressure. It was recemented and is again being tested through new perforations in the sand section logged between 7320-7400 feet.

Hiawatha Oil & Gas Company is still tied up with a fishing job in John Roemer Estate 1, near Seadrift in Calhoun County. The well is bottomed at 8470 feet, likely in heaving shale.

Wildcat northeast of Sweeden showing for producer.

Laredo.—Three new Mirando district oil fields, two in Duval County and one in Webb County, were in the making late in the week with as many wildcats in process of completion. The two Duval County strikes are developing a new trend through the eastern portion of the district, which likely will receive a rather active play.

Frank Gravis' F. Vaello Puig 1, four miles northeast of the Sweeden field, Duval County, was ready to test after drilling plugs at reported depth of 4756 feet. The well is supposed to have cored a sand in the Hockleyensis zone at 4740-56 feet and to have run a drill stem test at 4730-56 feet which flowed 43 gravity oil within seven minutes. The test, of eight minutes duration, recovered 600 feet of oil when the pipe was broken down. It had a good gas blow, although no gauge was made. The test is "closed," hence all data is approximate. Some information gives the total depth at 4800 feet in shale, but this is not generally accepted. Elevation is 385 feet, ground.

The above well is located in the southwest corner of a 300-acre lease out of the 1760.72-acre tract in the Andres Garcia Heirs, San Andres Grant, and is on a block of approximately 700 acres.

Sweeden field, with two producing wells, is productive from the Cockfield at 5900 feet. Hiawatha Oil & Gas Company's George Herberger 1, Section 14, east offset to the discovery well, found sand at 5862-9 feet, but went too deep into the horizon and could not cut off salt water. It was subsequently abandoned. The company is drilling two other wells on the lease. This operator holds the majority of the acreage in the vicinity of the Sweeden field and everything to the Gravis potential producer, including offsets.

Wildcat Northwest of San Diego Tests

E. R. Thomas Estate et al's Lillian Parr 1, northwest of San Diego and in Duval County, several miles north of the Gravis well, was testing at 4660-72 feet, in the upper Pettus section of the Cockfield, where the well showed for a high gas/oil ratio. It is in sand at 4659-72 feet. The well is the fifth to be drilled by the Thomas organization during the past several years, each showing oil in the Pettus horizon. The newest test is in SE SW Section 26, Valentine Survey. It previously had shown both oil and gas with some salt water on drill stem test of sand at 3952-72 feet in the Hockleyensis.

Several miles north of the above well in Section 289, H. F. Grimm's Elizabeth Mew 1, Section 289, showed 1400 feet of salt water on a drill stem test of Pettus sand at 4384-93 feet and was drilling ahead. The test was of 10 minutes duration. It had shown some saturation in the sand, which may lead to further development in the area.

The sector between the Seven Sisters and Loma Novia field was nearly

bridged during the week with A. J. Brinkoeter's P. Garza de Rodriguez, which is being completed on pump. The well found oil in the Loma Novia sand at 2646-56 feet and filled nearly to the top when swabbed. It is now being completed on pump, estimated at about 100 barrels per day. The test is one mile west of the Seven Sisters production.

Field Opened in Webb County

Webb County's discovery is Laurel Brothers 1, Section 333, two miles northeast of Oilton, which is being completed on pump and estimated at several hundred barrels of oil per day. It swabbed down and filled 1500 feet with Mirando type oil in several hours. It is in Mirando sand at 2031-36 feet, with casing set at 2026 feet. Elevation is 870 feet. The well is in the southeast corner of the section and in Block 29.

The above test is in the general vicinity of several failures and is lower structurally than a couple of wells which showed both oil and salt water.

It therefore is reasonable to assume that this is a new sand lens. This is typical of the country, series of sand lenses producing along the flanks of the general highs. This is further borne out in W. C. Billings' Fee 2, Block 1, Section 2 of the Lopez field, Webb County. The well drilled through the regular zone and encountered a new sand lens just below that level at 2289-96 feet, the result being a gasser spraying some oil.

Mills Bennett's M. D. Slator 2, Block 89, Mission Oil Company subdivision, two miles north of the south Webb County line, was drilling ahead below 2000 feet after showing considerably oily mud on a drill stem test of sand section at 1462-66 feet.

Eugene Garner, Jr.'s R. Saldivar 1, Section 657, about 12 miles south of Aguillares, also in Webb County, swabbed dry at 1001-6 feet, cored ahead to show salt water and is now coring at 1060 feet. It showed oil in cores of the sand but developed two joints of oil and mud on a 25 minute drill stem test.

Humble Oil & Refining Company has abandoned R. B. Swiger 1, Section 46, southeastern McMullen County, after showing salt water in sands in the Jackson and Yegua series to 3423 feet.

Two deep Trinity sand wildcats at critical depths.

San Antonio.—Two deep Trinity sand tests in South Texas Balcones Fault district had reached critical stages during the week and were being closely watched. Diamond Half Oil Company's E. Bibbs et al 1, Guadalupe County, was still in Glenrose limestone at 5150 feet after topping that formation at 3241 feet. The well, located in the J. W. Robinson Survey, is attempting to establish production on the west side of the Darst Creek field. It cut the fault at the upper sector of the Edwards lime, present producing level of the field, and expects production at around 5400-5500 feet.

The plan of operation, if successful, will lead to other Trinity sand operations along this trend.

Down in Frio County, Halff and Oppenheimer 8, an Amerada Petroleum Corporation project, was near 9000 feet in the Glenrose formation. It is the second 10,000-foot operation for the Pearsall field by this company, the other being Halff and Oppenheimer 2, discovery well of the field, which drilled to 10,050 feet in the Trinity, but plugged back to complete in the 3900-foot Navarro sand. About 2½ miles southwest of the field, this company is drilling around 6300 feet in D. D. Harrigan 1, an Edwards lime test.

TAKE OVER PLANT

Chase, Kansas.—The Tusler Petroleum Corporation has been organized to engage in all branches of the oil industry. Gerald C. Tusler is president and general manager. The company has taken over a 1500-barrel capacity crude skimming plant at Chase, which was originally built in 1934.

Gas and distillate in Sterling's Hidalgo County well.

Mission.—An extension of 1½ miles to the north was being provided to the 7800-foot Frio sand in the La Blanca field, Hidalgo County, by Sterling Oil & Refining Company's J. C. Engelman, Jr. 1, which was flowing 150 barrels of 51-52 gravity oil through 3/16-inch tubing choke after perforating casing with 40 shots at 7860-80 feet. The well had a working pressure of 2800 pounds on tubing and 3100 pounds on casing and was still rising.

The well is in Lot 5, Block 95, 1½ miles north of Pantano Petroleum Cor-

SUNSET LIMITED
Famed Train to
CALIFORNIA
You race westward in comfort comparable to a fine hotel on this completely air-conditioned transcontinental flyer. Yet you have the opportunity of seeing the wonders of the Sunset Route, trail of a thousand wonders.
Its companion is the Argonaut. Here are the accommodations: Standard and Tourist Sleepers, Room Car, Diner, Lounge Car, Soda-fountain, Radio, Barber, Valet, Shower Baths. And on both Chair Car and Coach passengers enjoy free pillow service.
They're both through trains; Sunset Limited New Orleans to San Francsico, Argonaut New Orleans to Los Angeles—via Lake Charles, Beaumont, Houston, San Antonio, El Paso. The Argonaut connects with the new streamliner Daylight for San Francisco.
Until next May 14 history's lowest all-winter round trip fares prevail. Commencing May 15 Vacation fares will be in effect.
Southern Pacific
J. T. Monroe, Passenger Traffic Manager
Southern Pacific Building
Houston, Texas

poration's deep producer in the same sand. This well is making a very small amount of distillate and a large volume of gas.

The Sterling concern's well may be plugged back for further testing in upper sands should this horizon fail to materialize into an oil producer. A sand also was logged at 7984-8012 feet and casing landed at 7984 feet. It is likely that this horizon also will be tested should the upper levels fail.

Testing Starr County Wildcat

Danrey Oil Company was testing its C. Ramos 1, Section 150, Starr County, which was in sand at 1275-80 feet. It is one of a series of wildcats in the south and western portion of Starr County which have shown oil or opened new fields during the past few weeks to revive activity in this part of South Texas.

Transwestern Oil Company's Slick Estate 2, deep test in central Starr County, had progressed to 4000 feet, while K. E. Merren's Starr County Cattle Company 1, Block 34, Porcion 89, in the Barbacoas area, which attempted to blow out at 5381½ feet in the Cockfield, has been plugged back and sidetracked to drill ahead.

Two deep wells are drilling in the eastern section of the Rio Grande Valley district. Stapper Petroleum Corporation's Port Isabel 1, Cameron County, was down 6475 feet and drilling ahead, while Shell Petroleum Corporation et al's La Sal Viejo prospect in Willacy County was going ahead below 8600 feet and coring.

DURABILITY

Houston Ready-Cut (Sectional) homes and buildings will give you years of service.

Only the highest grade materials are used in their construction. They are fabricated by skilled workers, and are designed with a background of many years experience in serving the housing and building needs of the oil and gas industry.

Sectional Panels are bolted together. Doors, windows, joists and sills are closely fitted. Every detail is aimed to give these buildings durability, to make them the most satisfactory you can buy.

HOUSTON READY-CUT HOUSE CO.

HOUSTON, TEXAS

READY FOR COMEBACK
Davis pays off creditors in full; heads company

San Antonio.—Edgar B. Davis, philanthropist oil operator of San Antonio and Luling, began his "comeback attempt" as preparations were made to remove the United North and South Development Company, of which he is head, from Federal receivership. The affairs of the concern had been in the hands of the court for several years.

The concern has been reorganized as a result of a $250,000 loan from the Luling Foundation, founded by Davis a number of years ago, and a $250,000 loan from the First National Bank of Dallas, plus the sale of some of the company's properties.

All of the creditors of the company have been paid in full, and the company has been completely reorganized. Davis again will resume his official position with the concern.

Davis pioneered the Balcones fault zone of South Texas, his J. M. Rios wildcat opening the Luling field in Caldwell County. His properties later were sold to Magnolia Petroleum Company for $12,000,000. He also opened the deep Buckeye field, Matagorda County, at the time of its discovery the deepest field along the Gulf Coast.

MARINE DRILLING
Texas Education Board Condemns opposers

Austin.—The State Board of Education has made public a resolution unanimously adopted condemning activities of citizens from coast towns who have objected to drilling in the Gulf of Mexico. The resolution read in part as follows:

"Certain individuals and associations have protested the development of these submerged properties on the theory that such development might adversely affect their fishing interest or create fire hazards and pollution of the waters.

"The Board of Education is of the opinion that such objections are unwarranted and unfounded. The land commissioner has full right and authority under the law to promulgate such rules and regulations under which such wells should be drilled as to practically, if not entirely, prevent and prohibit any of the occurrences that the opposition to such drilling claims to be possible.

"The Fish, Game and Oyster Commission has full legal authority to prevent pollution and is authorized under the law to enforce such rules and regulations as may be promulgated by the Commissioner of the General Land Office.

"In addition to the four million dollars heretofore paid to the Permanent School Fund as bonus money, there is a vast additional area that may be, during the course of time, profitably leased for development for a substantial cash bonus accruing to the Permanent School Fund, which bonus and royalties may be modestly estimated to exceed one hundred million dollars.

"It is the unanimous opinion and belief of the members of the Board of Education that these lands should be leased and developed."

SOUTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
ATASCOSA COUNTY—		
Frontier Oil Co., D. & A. Oppenheimer 1, 450 ft sl and nel 193.4-ac tr, Jr. Sharp No. 518, pb, td 2437 ft	10	2770
BEXAR COUNTY—		
P. N. McCullough, A. W. Bitter 1, J. M. Baerrera sur No. 58 (Von Ormy)	2	550
CALDWELL COUNTY—		
Adolph Douvre, W. M. Calliham 1, Dillard Cooper sur (Branyon)	†	1922
Eckert & Son, J. M. Fulps 1, J. Neill sur (Branyon), rerun to correct initial gauge	2000	2206
Edwill Oil Co., W. T. Cude 2, Wm. Spillers sur (Buchanan)	25	2250
Koenig Oil Co., Max W. Koenig (Tiller) 9, John Henry sur (Luling)	172	2112
Millican & Norman, W. L. Talbert 1, J. Henry sur (Luling)	750	2101
Taylor Ref. Co., Caldwell County 2, Dillard Cooper sur (Branyon)	16	2165
C. R. Tyrrell, E. B. White 1, J. Pinchback sur (Branyon-Buchanan)	*	2300
GUADALUPE COUNTY—		
Freeman Oil Co., J. F. Larison 3, Green DeWitt sur (South Darst Creek), pb td 2556	65	2715
Nick Marosis et al, Wm. Maierhofer 1, 300 vrs wl, 600 vrs nwl 100-ac tr, L. A. Peters sur, pb td 780 ft.	¶1	2175
Saxet Production Co., Grimm Estate 1, Green DeWitt sur (South Darst Creek)	1500	2592
Staats & Newton et al, T. Wilson 1, Green DeWitt sur (South Darst Creek)	200	2556
W. J. Walton et al, P. K. Delaney 1, 3050 ft n & 990 ft w from se cor of 417-ac farm in Jesus Cantu sur.	*	2350
MAVERICK COUNTY—		
J. N. Boicourt, Edson & Estrada 1, 442.80 vrs el, 402.20 vrs nl, James Eaves sur No. 68	*	2020
MILAM COUNTY—		
W. R. Ritchey, Chas. McDermott 1, 167 nwl, 1993 ft nel farm in J. R. Cockrill sur, 11.100 ft nel (little River) 972.22 ft sel of sur (6 mi e Cameron)	*	3420
WILLIAMSON COUNTY—		
David Kinsel et al, M. Backmeyer 1, H. White sur (Byersville)	*	954
M. Backmeyer 2, H. White sur (Byersville)	*	980
LAREDO DISTRICT		
DUVAL COUNTY—		
Bridwell Oil & Gorman-Yoakum, O. W. Greene 3, sur No. 118 (Hoffman)	55	2858
J. L. Collins, DCRC 1, sur 52, (Colmena)	¶20	1467
Conservative Oil Co., DCRC, Brown-Sentz-Murrell 2 (Colmena)	92	1478
Continental, Clara D. Sevier 13-A, 2080 ft nl, 340 ft el of sec 447 (Driscoll) pb 3584	450	3655
Cox & Hamon, J. B. Peal 10, sur 796 (Lopez)	300	2212
J. B. Peal 11, sur 796 (Lopez)	300	2210
Hiawatha Oil & Gas Co., Geo. Herberger 1, sec 14, Ball Ranch sub (Sweden)	*	5896
Humble, DCRC 14-C, sur 901 (Lopez)	225	2084
DCRC 15-C, sur 901 (Lopez)	275	2089
Dowdy-Fee 8, sur 272 (Seven Sisters)	500	2557
Dowdy-Fee 9, sec 272 (Seven Sisters)	500	2553
M. C. Hubberd 22-B, sec 83 (Loma Novia)	1000	2765
G. Ruiz Est. 27, sec 553 (Loma Novia)	265	2754
Magnolia, S. Benavides 23, blk 1, O'Hern and Seaboard sub, 1 mi ne Cole-O'Hern prod	*	2955
DCRC 15, sec 100 (Piedra Lumbre)	320	1993
J. O. Wilson 16, sec 248 (Gov't Wells)	40	2442
Ralph Ogden, D. Ruiz Est. 2-A, sec 41 (Loma Novia)	125	2595
Reliance Oil & Royalty Co., A. Litchenberger 2, sec 225 (Seven Sisters)	*	2753
Russ Pet. Corp., J. A. Tuck 1, sec 64 (Gov't Wells)	*	2591
Standard of Kansas, O. W. Kreen 4, Sec 118 (Hoffman)	172	2862
Texas Co., Bishop Cattle Co. 23, sec 67 (Loma Novia)	82	2582
Westheimer & Daube, Z. Campos 31, sec 224 (Seven Sisters)	250	2907
McMULLEN COUNTY—		
Conservative Oil Co., Allen 4, J. Gardner sur (Calliham)	*	680
J. Stitz 15, J. Gardner sur (Calliham)	40	704
J. Stitz 16, J. Gardner sur(Calliham)	*	710
Humble, R. B. Swiger (Gouger) 1, 330 ft nl & wl se¼ A. B. & M. sur No. 46	*	3423
Loma Oil Co., L. Jacob Corp. 4-B, GH&H sur No. 15 (N. Jacob)	5	1055
STARR COUNTY—		
J. H. Clopton et al, Green 1, blk 5, sh 85, por 81, perf 1604-14 ft	¶5	4620
St. Marys O&D Co., Seabury et al 1, sh 5, por 75 (Los Olmos)	*	1017
Sun, Chapotal Land Co. 4, por 99 (Samfordyce)	†	2040
WEBB COUNTY—		
W. C. Billings, Fee 2, blk 1, sec 2 (Lopez)	¶10 & 10	2296
O. W. Killam, A. M. Bruni 50, blk 10, sec 8 (Cole-Bruni)	*	3170
C. H. Lewis, A. Lopez 2, sec 110 (Lopez)	480	2252
A. Lopez 13, sec 110 (Lopez)	550	2273
Magnolia, Seacord Benavides 19, blk 457, sec 174 (Cole-O'Hern)	200	2925
Mortimer & Springer, J. L. Valadez 2, sh 11-B, sec 73 (Lopez)	425	2140
Smith & Hamill, S. Benavides 24, blk 502, Arispe gr (Cole-O'Hern)	135	2945
A. M. Bruni 2, sec 2213 (Cole-O'Hern)	65	2935
Texas Co., S. Benavides 5-A, blk 373, Arispe gr (Cole-O'Hern)	50	2911
ZAPATA COUNTY—		
George Buck, A. D. Haynes 4, sec 14 (Comitas)	50	1160
Earl Callaway, E. B. de los Santos 4, Comitas gr, sh 7 (Escobas)	12	1224
J. Garcia 5-A, sh 3, Comitas gr (Escobas)	30	1043
F. V. Curry, P. Trevino 10, Charco Redondo gr (Charco Redondo)	3	245
P. Trevino 11, Charco Redondo gr (Charco Redondo)	3	245
Magnolia, Gonzales Cuellar 2, C. Blanco gr (Cuellar)	¶12	1132
Randolph Wheeles, Mrs. S. Welsh, 150 ft nwl and swl blk 4, Bateman sub, Pedernal gr	*	3015
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
W. J. Collins & Broughton Wilkerson, McCampbell Ranch 1, blk 10, McCampbell subdv. (McCampbell)	*	6560
BEE COUNTY—		
Dirks Bros., T. Strauch 2, 330 ft wl, 150 ft sl of 133-ac Farm in sec 19 J. M. Uranga gr, 1200 ft sw No. 1	300	4275
H. H. Weinert et al, James Smith 1, J. R. Johnson sur A-206 (Plummer)	¶10 & 35	3049
CALHOUN COUNTY—		
Humble & Plymouth, E. H. Welder 5, J. M. Rio sur, (Heyser), pb 5467 ft	650	5486
Portilla Drlg. Co., P. H. Welder 12-C, Sisneros sur (Heyser)	600	5485
P. H. Welder 13-C, Sisneros sur (Heyser)	750	5452
GOLIAD COUNTY—		
Dirks Brothers, Dr. G. W. Allen 1, Obid Marshall sur, (Slick)	¶20 & 10	4404
JACKSON COUNTY—		
Shell, T. N. Mauritz 1-B, 682 ft n and 800 ft e of most easterly sw cor O. S. York sur, ab 306 (Mauritz)	125	5704
Texas Co., T. N. Mauritz 1, 467 ft s 89 deg. 39 min w and 467 ft n 0 deg. 14 min w from se cor of sec 4 York survey in Morris & Cummings sur A-305	¶4 & 125	5112
JIM WELLS COUNTY—		
Diamond Half Oil Co., F. G. Peterson 1, sec 76 of Haldeman's subd, Seeligson Ranch (Premont)	¶10 & 60	2662
Mary B. Thirkell 1, sec 77, SK&K sur No. 217 (Premont)	125	2257
C. C. Glasscock, J. C. Ritter 1, sur 231 (Premont)	500	3180
Tom Graham & Gilcrease Oil Co., F. Bennett 1-B, Haldeman sub, sur No. 215 (Premont)	225	2280
C. M. Laughlin A-1, sur No. 231 (Premont)	*	2356
Tom Graham, James P. Luby Est. 2, 990 ft n and wl of sh 4 Los Presnos de Abajo gr (Bentonville)	*	5793
O. W. Killam, W. D. Wade 1-B (9), Lopez de Jean gr (Sandia)	500	4019
S. J. Sloane & D. B. Cogswell, D. D. Nash 1, Haldeman sur, SK&K sur No. 215 (Premont)	100	2352
NUECES COUNTY—		
I. J. Allen & Seaboard Oil Co., J. O. Chapman et al 3, 660 ft sl & el se¼ of sw¼ of sec 38, Laureles Farm Tracts, Ramon de Ynojosa gr, 1320 ft No. 2 (Chapman Ranch)	750	5058
W. C. Brady, Trustee, Hartly et al 1, Ehlers Gardens tr (Saxet Heights)	375	4089
Cosner & Cosner, Myrtle L. Stockton 1, sec 25 Laureles Farm Tracts (London)	350	4719
Crown Central, Rand Morgan 7-B, GC&SF sur No. 1 (Saxet)	335	4455
Myrtle L. Stockton 1, sec 25, Laureles Farm Tracts (London)	*	4796
Donico Prod. Co., V. M. Donnigan 2, Kinney Sectionized Lands, (Saxet)	450	4960
Houston Oil, Rand Morgan 21, sec 7, Range 5 (Saxet)	375	4423
H. H. Howell, W. S. Hutchins 3, G. Frank sur (Saxet)	300	6292
Humble & Barnsdall, Solar Oil Co. et al 2-A, lot 14, blk 47 (Flour Bluff)	650	6655
Magnolia, Clara D. Sevier 2, E. Russell sur (Clara Driscoll)	*	5800
Pan American, Solar Sevier 4, sur 582 (Saxet)	560	6273
Perry & Reed, Reed 1, Villareal gr (Saxet)	*	6642
Richardson Pet. Co., Cain & Sechrist 7, Russell Farm Lots (Saxet)	450	4433
Cain & Sechrist 9, Russell Farm Lots (Saxet)	450	4460
M. Erigan 3, Sheppard Farm Lots, GC&SF sur 311 (Saxet)	500	5828
A. C. Erwin 1, sur 500 (Saxet)	550	5837
Southern Minerals, M. B. Mastin 5, sur No. 416 (Saxet)	500	6921
REFUGIO COUNTY—		
Josey & Bruton, M. F. Lambert 1-B, Wm. Hews sur (Fox)	*	5895
Quintana Petr. Corp., Tom O'Connor 46-A, sur A-395 (Tomoconnor)	1225	6005
Tom O'Conner 13-C, J. M. Swisher sur 3 A-395 (Tomoconner)	1250	5960
United Prod. Co., M. F. Lambert 50, J. M. Swisher sur No. 6 (Tomoconner)	875	5905
Wynne Drlg. Co., Mrs. C. D. Roache 1, 14,000 ft nel, 5850 ft sel of John Patrick, Thomas and Jas. Downey sur, in center blk 15 Morgan Bros. S. D. 8 mi sw Woodsboro, tentative	*	6526
SAN PATRICIO COUNTY—		
Eleanor Oil Co., J. F. Green Est. 1, beg at ne cor of lse, go 4455 ft nw along nl (RR) thence 990 ft s at right angles to lcn 1674-ac lse, T. T. Williamson sur	*	7305
Eaves Oil Co., J. L. Brittain 6, Taft Farms (Taft)	250	4921
Humble, J. W. Mayo 19, J. D. Bryan sur (Taft)	225	4929
Plymouth Oil Co., E. H. Welder 70-C, Welder subd (Plymouth)	500	5643
E. H. Welder 72-C, Welder Ranch subd (Plymouth)	600	5619
VICTORIA COUNTY—		
Barnsdall, Dr. E. G. Grey 3, Brownson sur (Placedo)	450	4777
Barnsdall & American Liberty, J. M. Pickering 10, Wm. Rupley sur (Placedo)	650	4773
Shell, Houston Nat'l Bank 2, sur A-304 (Placedo)	250	4770
Superior et al, J. Hosek 3, sur A-304 (Placedo)	600	4769
J. Hosek 4, sur A-304 (Placedo)	425	4761
Union Oil of California, Claude A. Keeran 3, 660 ft swl, 3160 ft nwl of 5000-ac lease, M. de Leon sur, 2500 ft se No. 2 (Keeran)	325	6605

*Failures; †Junked; ¶Million cu. ft. gas.

TEXAS GULF COAST

Texas Company discovers gas field at Blue Basin.

* * *

Salt water in Dickinson outpost at 8198 feet.

Houston.—A new gas field was discovered at Blue Basin prospect, Wharton County April 16, when The Texas Company's Kluck 1, J. Hyland Survey, came in making dry gas from Miocene sand from 4642 to 4657 feet. The flow was through a quarter-inch choke and showed a tubing pressure of 1450 pounds and a casing pressure of 1910 pounds. Drilled to 6530 feet in salt water sand, the well was plugged back and a cement retainer set at 4381 feet. Top of the gas sand was logged at 4642 feet and a drill stem test from 4638 to 4654 feet showed a 500-pound pressure through a quarter inch choke. The hole was cored down to 4718 feet, and a few more feet of gas sand was taken in. Five-inch casing was cemented at 4718 feet and perforated with 60 holes.

The test was the sixth wildcat drilled on the prospect. Pure Oil Company drilled five dry holes in the district before The Texas Company rigged up Kluck 1 in the center of the five dry holes. The prospect was shot with reflection seismograph and torsion balance by both companies.

A new location was announced at Lake View gas field last week by Smith & McDaniels Hurlburt 1 is 2300 feet west and 1300 feet north of the southeast corner of I. & G. N. Survey, No. 23, abstract 241, Wharton County.

Approximately 7½ miles north of Louise field, Wharton County, Sam G. Harrison announced location for H. & G. N. Harfast 1, 654 feet east and 1852 feet north of the southwest corner of L. Conkrite Survey. This well is located on the Rio prospect, which Humble Oil & Refining Company found by working with geophysical instruments.

Work Over South Bay City Discovery

Hammond Exploration Company worked over the discovery well at South Bay City field, Matagorda County, and it was flowing gas, distillate and wash water at the close of the week. Cleveland 1 was perforated around 9200 feet and came in through a quarter-inch choke and had a tubing pressure of 3000 pounds.

On the west side of the Van Vleck field, Matagorda County, Skelly Oil Company's Rugeley 2, M. Cummings Survey, has shown nothing but salt water on drill stem tests down to 8230 feet. After showing oil and salt water the previous week from a new sand at 8040 to 8072 feet, the perforations were squeezed with cement and the casing again perforated from 7490 to 7500 feet with 23 holes. A 25-minute drill stem test showed 7100 feet of salt water and no pressures. The hole has been drilled to 8230 feet and perforations squeezed from 7490 to 7495 feet again. The crew was preparing to perforate casing again for another drill stem test.

Royal Oil Company's W. Holub 1 at Van Vleck cored sand and shale with a gas odor from 7090 to 7100 feet and at 7200 feet encountered salt water. The hole will be carried down to the regular Van Vleck producing horizon.

Sand Test Waits On Fishing Job

Shell Petroleum Corporation was fishing for drill pipe on Maco Stewart 2, Hitchcock prospect, J. Spillman Survey, Galveston County, at 6800 feet last week. When this is over a drill stem test will be made of sands found from 6697 to 6710 feet.

At Green Lake field, Galveston County, Sun Oil Company was swabbing Hughes 8, Wm. Scott League, No. 29, at 3909 feet. A sand showing oil was encountered from 3894 to3909 feet. If the well proves productive it will be the second producing well in the field. The other six wells have been dry.

Approximately 1200 feet west of production at Dickinson field, Galveston County, Bennett Petroleum Corporation and Kenyon et al's Way 2, showed salt water after making several drill stem tests at 8198 feet. Six-inch casing, set at 8191 feet, was perforated with 22 holes from 8115 to 8126 feet and with 21 holes from 8137 to 8144 feet, and showed salt water. A cement retainer was set at 8086 feet, and casing again perforated with 12 holes from 8058 to 8062 feet. A 10-minute drill stem test through a quarter-inch choke showed salt water and sand. The operators will squeeze cement through all the perforations and make another test of the deep sands.

TEXAS GULF COAST
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
AMELIA—		
Humble, Tyrell Combest 4	576	6780
ANAHUAC—		
Gulf, Knowles 7	708	7115
Humble, Grippon 10	456	7069
BOLING—		
Crosby Dr. Co., Farmer 1	*	5019
CONROE—		
Burton & Harnes, Koonce 1	330	5058
Strake, Dean 14-B	*	5114
GOOSE CREEK—		
J. Clay et al, Paddock & Smith 2	150	1922
HASTINGS—		
Navarro Oil Co., Callahan 1	668	6106
HULL—		
Gulf, Baldwin 23	369	5015
HUMBLE—		
P. C. Cezeaux, Mason 6	10	773
MANVEL—		
L. C. McBride, White 1	480	4067
RACCOON BEND—		
Humble, McCasland 12-X	816	4120
SILSBEE—		
Republic Prod. Co., Brooks 10	150	6966
TOMBALL—		
Humble, Hegar 2	528	5565
Norvell 1	576	5564
Tomball Townsite Unit 8, No. 1	552	5574
Shell, Beeler 2	627	5573
JEFFERSON COUNTY—		
David B. MacDaniel, Gilbert 2, Gilbert Ranch area, J. Grant sur...	*	7886
MATAGORDA COUNTY—		
Glenn H. McCarthy, Foley Land 1, Palacios prospect, L. Goodwin sur	216	8682

*Failures; †Junked; ¶Million cu. ft. gas.

Clinton Well To Set Screen

Stanolind Oil & Gas Company was coming out of the hole to set screen at all sands encountered below 8000 feet in Oates 1, approximately 4000 feet south of the discovery well, C. Martinez Survey, Clinton area, Harris County, at the end of the week. April 16 the well was reported showing a large gas pressure. The discovery well showed a shut in pressure of 5100 pounds.

At Aldine in Harris County, Texas Gulf Producing Company was swabbing Gillespie 1, S. Contreras Survey, at 7106 feet. Two drill stem tests were attempted, but both failed. Then the well was washed and it failed to flow.

Another test was made on Humble Oil & Refining Company's Jefferson Land Company 1, Cheek area, C. Hillibrand Survey, Jefferson County, last week and it showed salt water. At 7925 feet the hole was swabbed and April 16 the wildcat came in flowing salt water showing neither oil or gas. Tubing pressure was 800 pounds. Another test will be made.

On the Gilbert Ranch prospect, Jefferson County, David B. McDaniel's Gilbert 2, J. Grant Survey, was abandoned at 7886 feet. It is reported McDaniel will drill another well in this area.

Approximately 900 feet west of production at South Cotton Lake field, Salt Dome Oil Corporation cored oil sand in Lawrence 1-D, S. Burney Survey, from 6514 to 6519 feet and was preparing to make a drill stem test at the end of the week.

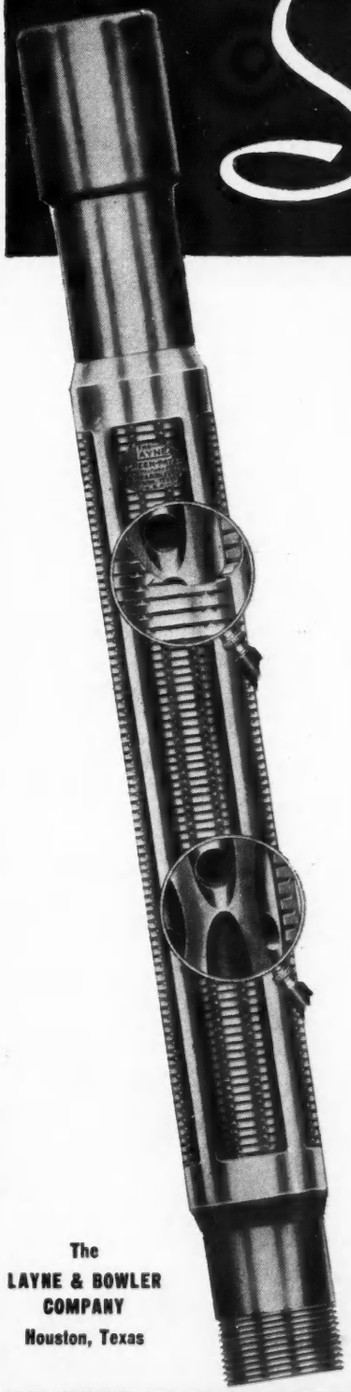
At Seabreeze, Sun Oil Company's White Estate B-1, Wm. Mays Survey, Chambers County, was reaming at 9637 feet. An electrical logging device run in the hole would not go below 3100 feet.

Two Due at Segno

Humble Oil & Refining Company's Kirby Lumber Company B-1, approximately 3200 feet east of production in Segno field, Polk County, was drilling ahead in shale below 5414 feet after a drill stem test at 5202 feet showed salt water. The 20 minute drill stem test through a quarter-inch choke showed five thribbles of mud, 29 thribbles of oily salt water, six thribbles of oil, and seven thribbles of salt water.

Gulf Oil Corporation was preparing to complete its first producer at Segno in Polk County at the end of the week. Wing 1 showed 1400 feet of oil on a nine-minute drill stem test at 5176 feet. Seven-inch casing was cemented at 5185 feet.

LESS *Sanding-up*



of WIRE WRAPPED SCREEN

reduces frequency of washing out

The smooth surface and even distribution of pressure on wire wrapped screen very materially reduces sanding up and makes the expensive job of washing a rare one indeed. Should a Wire Wrapped Screen become clogged after a long period of service, the job of washing it clean is an easy one.

Wire Wrapped Screen is far easier to pull, should it become necessary to do so. The fishing tool can get a more secure grip on the pipe, since the wire wrapping prevents expansion of the pipe.

The LAYNE WIRE WRAPPED SCREEN

reduces the possibility of sanding up to an absolute minimum. The wire used is a specially made tapered shape. The small side of the taper is wrapped next to the pipe, to give a narrower opening on the outside, than that on the pipe and over the perforations. Anything passing through the outside opening will go on through the wire and be pumped out.

The LAYNE & BOWLER COMPANY
Houston, Texas

THE LAYNE WIRE WRAPPED SCREEN

Jennings, South Louisiana's oldest, booming again.

* * *

Search for deep production greater than ever.

* * *

Shell plugs back South Roanoke discovery for test.

Lake Charles.—Acadia Parish's Jennings, oldest field in the Louisiana Gulf Coast, appears to be a young, booming field in the area from development standpoint. Last week A. C. Glassel extended the field and Superior Oil Producing Company has a well at completion stage which will no doubt lead to further drilling around the flanks of this old field.

On the southwest flank of the field, Glassel's Trushel 1, Section 42-9s-2w, came in flowing 482 barrels of pipe line oil daily from 100 feet of sand at 6921 to 7021 feet. It is supposed to be 450 feet lower than other producing wells in the district. Trushel 1 was completed after considerable trouble setting screen and liner. Seven-inch casing was cemented at 6930 feet, and when cement plugs were drilled the well came in flowing through a 12/64-inch choke. It had a tubing pressure of 1300 pounds and a casing pressure of 1275 pounds. One location southwest of Trushel 1, Trushel 2 is a derrick.

Superior Oil Producing Company's Leckelt 2, southwest Jennings outpost, Section 42-9s-2w, made a test from 5780 to 5790 feet and flowed oil and wash-water. Tubing pressure was 500 pounds. At the end of the week the crew was running tubing for a production test. Leckelt 2 was drilled to 8329 feet in salt after topping the formation at 7564 feet. The hole was plugged back to 6850 feet and cement drilled to 6877 feet. It is a west offset to the company's Crowley 1, which was the second well completed on the southwest flank of field. The latter producing from 5510-5530 feet. Superior has made location for Leckelt 4, 690 feet north and 185 feet west SEc Section 42-9s-2w.

On the southeast flank of Jennings, Shell Petroleum Corporation completed Community 2, Section 40-9s-2w, at 7355 feet after perforating seven-inch casing with 97 holes at 7310 to 7355 feet. Community 2 made 5,647,000 cubic feet of gas daily and 64 barrels of fluid, 50 percent salt water, through a 19/64-inch choke with a tubing pressure of 2750 pounds and a casing pressure of 2790 pounds.

Five Wells Below 10,000 Feet

While Jennings is probably the most active field in South Louisiana from development standpoint, the southern part of Louisiana is taking the greatest stride in searching for new oil reserves below 10,000 feet in the history of the state. Five wells are below the 10,000-foot mark and two of these are drilling below 11,000 feet.

Humble Oil & Refining Company's Flender 1, Houma gas field, Section 23-19s-19e, the deepest actively drilling well in the world, at the end of the week was drilling below 11,787 feet in shale. Unconfirmed reports are that the operators intend to carry Elender 1 below 13,000 feet. However, the company is going to drill Elender 1 until trouble is encountered and if there is no trouble before 12,786 feet the wildcat will establish a new deep drilling record for the world. A string of 9⅝-inch casing was cemented at 8735 feet, believed the longest string of 9⅝-inch casing ever longest string of 9⅝-inch casing ever set.

The Texas Company also has a 11,000-foot well drilling in Southeastern Louisiana. Horseshoe Bayou 1, Wax Lake prosect, Section 40-17s-9e, St. Mary Parish, was drilling below 11,457 feet at the end of the week. The crew set a string of 7⅝-inch casing at 10,975 feet, the longest string of that size ever set. It has been rumored that the company has 30 feet of oil sand at 10,975 feet which showed 30 ohms on an electrical logging device. Probably the crew will plug back and test this sand after drilling to greater depth.

Second Deepest in South Louisiana

At Lake Barre field, Texas Company's State Lake Barre 37, Section 30-21s-20e, Terrebonne Parish, is the next deepest active well in Louisiana Gulf Coast. The crew is fishing at 10,959 feet and it is reported that the operators will have to plug back to 2200 feet and sidetrack. A string of 9⅝-inch casing was set at 8063 feet.

On the Ebenezer prospect, Acadia Parish, Humble Oil & Refining Company has another 10,000-foot test drilling. Nordyke 1, Section 25-10s-1e, is drilling in Marginulina formation at 10,056 feet, having topped the formation at 9684 feet. This well has had several good showings of oil around 8700 feet, and after drilling to a greater depth it will be plugged back and the 8700-foot sands tested. A string of 9⅝-inch casing was set in Nordyke 1 around 6850 feet.

The Texas Company's Rigolets 6, east side extension test of Lafitte field, Section 29-17s-24e, Jefferson Parish, was at 10,047 feet in sand showing oil after logging the top of the sand at 9999 feet. An electrical logging device was run and casing probably will be set for a production test. On the northwest side of Lafitte field, The Texas Company made location for R. C. Milling 2, 4975 feet north and 1270 feet east of the southwest corner of Section 20-17s-24e. This well probably will be drilled to 10,000 feet, as R. C. Milling 1 was completed at 10,040 feet.

Within the past two years 17 wells in the Louisiana Gulf Coast have drilled to below 10,000 feet. The area no doubt is the deepest drilling region in the world. Superior Oil Producing Company has drilled two 10,000-foot wells, Shell Petroleum Corporation has drilled two, Humble Oil & Refining Company, four; Continental Oil Company, one; The Texas Company, six; Pure Oil Company,, one and Stanolind Oil & Gas Company, one. The deepest well drilled in the area was Continental Oil Company's Hebert 1, at Abbeville prospect, Acadia Parish, which went to 12,216 feet. Stanolind Oil & Gas Company's Stoval 1, south of Abbeville, was abandoned at 12,128 feet and was the second well in the area to go below 12,000 feet.

English Bayou Test Shows Salt Water

On the southeast side of English Bayou, Calcasieu Parish, Fohs Oil Company's First National Bank 1, Section 13-9s-9w, showed salt water on a drill stem test from 7057 to 7061 feet. First National Bank 1 was drilled to 7158 feet in salt water sand and the hole plugged back to 6980 feet. A sand with a showing of oil was logged from 7041 to 7044 feet.

In Section 1-9s-8w, Calcasieu Parish, The Texas Company's Nickerson Fee 1, Gillis field, was making a production test of Marginulina sands at 6718 feet. Oil sand was logged from 6707 to 6716 feet and seven-inch casing was cemented at 6704 feet.

Northeast of production at Cankton field, St. Landry Parish, Superior Oil Producing Company abandoned F. Brasseau 1, Section 24-8s-3e, at 8660 feet in salt water sand. The well failed to pick up the producing sands found in Cankton field proper.

Shell Petroleum Corporation decided to kill Sturdevant 1, South Roanoke prospect, Section 25-10s-4w, Jefferson Davis Parish, last week after the well came in making gas and distillate, open-

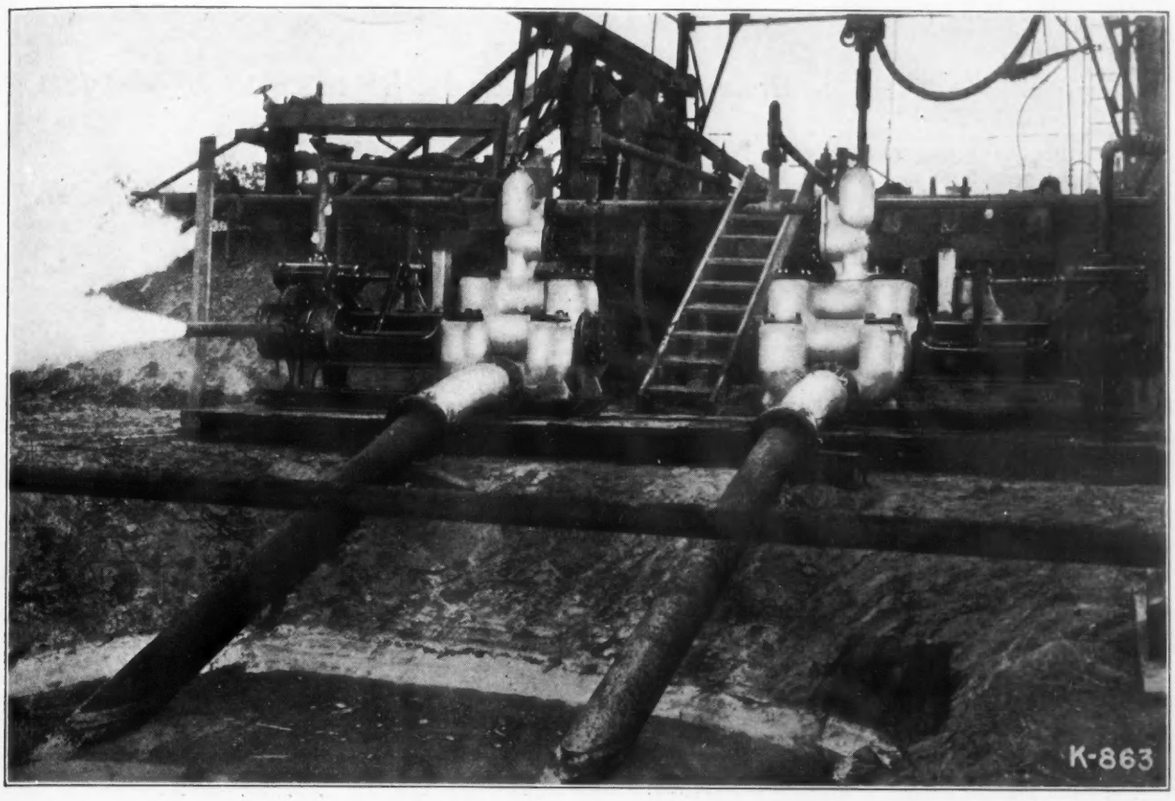
SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANSE LaBUTTE—		
Stanolind, Patin 2	*	lcn.
CANKTON—		
Superior, Brasseau 1	*	8660
DARROW—		
Humble, Gumble 9	*	7980
JENNINGS—		
A. C. Glassel, Trushel 1	482	7021
Shell, Community 2	5	7355
WEST HACKBERRY—		
Burton & Sutton, Elender 1	180	4850

*Failures; †Junked; ¶Million cu. ft. gas.

WILSON-SNYDERS

dig the deep ones . . . ECONOMICALLY



Because they have the power—the speed—the dependability—the stamina to stay on the job, Wilson-Snyder Slush Pumps enable you to make hole faster and save on drilling costs.

STEAM	POWER	BOILER FEED
Super—15 x 7¾ x 20 (10″ Combination Side and End Suction)	No. 7—7¼ x 18	10 x 4½ x 10
No. 18—14 x 7¼ x 18 (10″ Combination Side and End Suction)	No. 6—6 x 16	7 x 4½ x 10
No. 16—12 x 6 x 16	No. 12—6 x 12	
	No. 12—5 x 12	

WILSON-SNYDER PUMPS ARE DISTRIBUTED ON THE GULF COAST EXCLUSIVELY BY

WILSON SUPPLY CO.

1412 MAURY ST., HOUSTON, TEXAS

Exclusive Gulf Coast Distributors for: Wilson-Snyder Pumps; American Cable Tru-Lay Pre-formed Wire Rope; Kewanee Boilers; Sievers Reamers; Drift Meter Jr.; Gray Swivel; Nixon-Ferrill Gas Lift; Nixon True-Taper Slip and Spider; Bowen Pack-Off and Releasing Drill Pipe Overshot; Douglas Weight Indicator

OIL AND GAS WELL SUPPLIES

Branch Stores—Barbers Hill, Kilgore, Gladewater, Talco, Bay City, Victoria, Pierce, and Corpus Christi, Texas. Lake Charles, New Iberia, and Rodessa, Louisiana.

Sales Offices—Tulsa, Oklahoma; Dallas, Texas; Shreveport, La.

ing a new producing area for the Louisiana Gulf Coast with 2,700,000 cubic feet of gas daily and one barrel of 52 gravity distillate per hour from Marginulina sands at 8550 feet. The hole was plugged back to 8515 feet for another production test.

To Test High Pressure Sands

Pan American Production Company was cutting and pulling stuck drill pipe on Harange 5, Section 8-17s-20e, Valentine field, Lafourche Parish, after sticking the pipe at 7718 feet. After the hole is cleaned operators will set casing and test high pressure sand around 7481 to 7502 feet. This sand showed 1600 pounds pressure.

William Helis' City of New Orleans 1, Marchland prospect, Section 19-23s-23e, Lafourche Parish, hit salt the second time in a sidetracked hole. At the end of the week the crew was running geophones at 7549 feet in salt. Top of the second salt was encountered at 7547 feet. City of New Orleans 1 penetrated salt first at 7564 feet. The hole was plugged back and redrilled down to the salt.

NORTH LOUISIANA

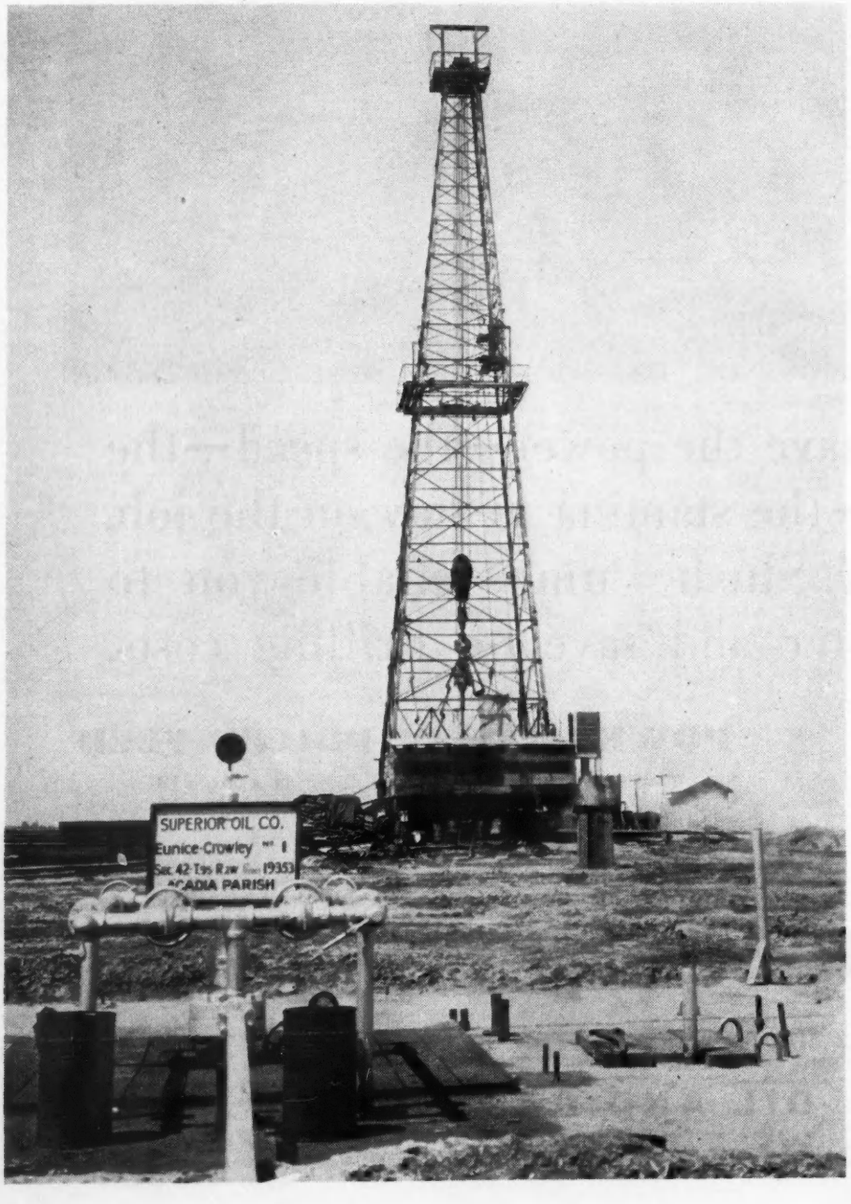
Rodessa test in Caddo Parish to go to 10,000 feet.

* * *

Sligo field outpost may be commercial producer.

* * *

New level shows possibilities in Lisbon field.



Superior Oil Producing Company's Leckelt 2, west offset to Eunice Crowley 1, at Jennings, Acadia Parish, which extended the field southwest last week.

Shreveport.—R. W. Norton's W. E. Payne 1, SE SE 27-23n-16w, proposed 10,000 foot test for the Caddo Parish side of Rodessa located south of the fault, last week continued coring ahead below 9058 feet, with plans of the owner to continue to 10,000 feet before any test for production is made.

Although information was withheld on the test, it is reliably reported to have had a gas showing in the Travis Peak and an oil showing in the lower Marine, the latter probably around 8600 feet. After the reported showing in the Travis Peak, United Gas Public Service Company, which has had access to the log and cores of the well, not only began to add to its leases in the vicinity of the well but also began deepening several tests in the field to the Travis Peak horizon. It is reported that since the oil showing Norton has been interested in adding available acreage around the test,

In the gas producing area on the Cass County, Texas, side of the field, United Gas Public Service Company's J. W. Land 1, Robert Potter Survey, continued to core below 6700 feet and its I. L. Young 5, Section 21-23n-16w, being deepened to the Travis Peak, was coring below 6488 feet. Marr and Perkins' Hunter 5, Section 13-23n-16w, being deepened to the Travis Peak, was drilling below 7043 feet.

East Outpost Coring

A quarter-mile east outpost test in the northeast part of the field, Lion Oil Refining Company's Holm 1, NW SE SE 9-23n-15w, was coring below 5878 feet after topping an anhydrite stringer at 5425 feet and cutting the fault between 5670 and 5700 feet. Top of the Hill formation was identified at 5755 feet. Drillers, Incorporated's Glassel-Means 1, north offset to this test in the same section, is drilling below 2920 feet.

In Section 8-23n-15w, Lyons and Neely's Noel 1 and Noel 2, have been completed as gassers and are awaiting

gauge at 5825 and 5830 feet, respectively.

In the northwest offshoot area on the Louisiana side, Gulf Oil Corporation's Campbell 1, SE NW 4-23n-16w, offsetting J. Edward Jones' Maidie Sharp B-1 in the same section, which is a producer, was coring below 5820 feet. Jones' Maidie Sharp B-2, same section, was coring below 5780 feet and Standard Oil Company of Louisiana's Terry 1, NE SW 9-23n-16w, south offset to the same company's Parker 1, a producer in this section about midway between the field proper and the 1¾-mile extension offshoot, was waiting on cement to set at 5880 feet, with total depth of 5894 feet.

Texas Side B.H.P. 2251 Pounds

Bottom hole pressure on the Texas side of Rodessa, as shown by the Texas Railroad Commission's contour map of March 1, is an average of 2251 pounds, the bottom hole pressure factor being .04023874 barrels.

Total acreage allotted to oil wells on the Texas side of the field is 4,239.44 acres, the acreage factor being one acre to 4.956406 barrels. The total field outlet for that date was placed at 38,454 barrels, with allocation to bottom hole pressure 17,886 barrels and allocation to acreage 17,886 barrels, and allocation to high gas-oil wells 2682 barrels.

At the time the map was drawn there were 233 producers on the Cass County side of the field, of which 34 were classed as high gas-oil ratio wells. Seven of the wells were listed as producing from the Gloyd horizon.

Bottom hole pressure maps for the 31 day period ending March 31 on the Louisiana side were being drawn last week by the engineers of the Rodessa Operators Committee and were expected to be finished in a few days.

The Rodessa Operators Committee has been studying recently the salt water situation in the 84 wells on the Louisiana side of the field but has not made public the findings or recommendations.

Rework Discovery Well

United Gas Public Service Company's I. L. Young 1, SE SE 21-23n-16w, discovery oil well of Rodessa field, completed in July, 1935, was plugged back last week from 6048 feet to 6036 feet in a work-over and was re-completed at the shallower level flowing 37 barrels of oil per hour through ¼-inch tubing choke, with a casing pressure of 1350 pounds and tubing pressure of 900 pounds.

Sligo Extension Shows

Showing oil during swabbing operations last week, the fifth oil producer from basal Glen Rose (Petitt horizon) appeared likely in the Sligo field, Bossier Parish, as United Gas Public Service Company tested Skannal I-1, SW SW 25-17n-12w, at total depth of 5175 feet. The test is about ⅜ mile south of production.

On the south flank of this field, Haynes Drilling Company's A. J. Murff 1, Section 35-17n-12w, after going to 6112 feet and into the Travis Peak, deepest test drilled so far in Sligo, was arranging to set 4600 feet of 6⅝-inch casing to test a show of gas at the Jeter horizon (4200-4400 feet).

United Gas Public Service Company's Webb 1, Section 23-17n-12w, was running 7-inch casing after going to the Petitt horizon at total depth of 5172 feet.

Texas Rodessa Extension Attempt Fails Again

Arkansas-Louisiana Gas Company's Laura McIntosh 1, William Edmonson Survey, Marion County, Texas, 2½ miles southwest of Rodessa production, a test that swabbed dry twice with a small oil show when tested after 7-inch casing was cemented at 5952 feet proved equally disappointing last week when casing was perforated with 64

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BOSSIER PARISH (Sligo)—		
Triangle Drlg. Co., H. L. Skannal H-1, 23-17n-12w	200	5166
CADDO PARISH (Pine Island)—		
Stanolind O&G Co., Dillon Hrs. 120, 14-21n-15w	150	1665
Butts & Hill, Caddo Levee Bd. 1, 8-20n-16w	*	962
CLAIBORNE PARISH (Lisbon)—		
Oden & Evans, Patton Est. 1, 36-21n-5w	487	5373
Red Iron Drl. Co. & Scout Oil Co.'s Patton 1, 36-21n-5w	827	5313
FRANKLIN PARISH—		
S. C. Jensen, Bailey 1, 12-11n-6e	*	2285
DE SOTO PARISH (Naborton)—		
Gulf Oil Corp., Jenkins A-36, 2-12n-12w	7	2453
WEBSTER PARISH(Cotton Valley)—		
United Gas P. S. Co., J. M. Mixon 2, 22-21n-10w	297	8231

*Failures; †Junked; ¶Million cu. ft. gas.

Take a look at the directions on this name plate and you'll see why any member of a crew can't go wrong in setting the SHEAR-RELIEF Valve. There's the pump pressure at which each nail size shears, and there's the nail gauge to prevent mistaking nail sizes. Position of the set nail is shown at the right. And the instructive name plate is only one of the numerous features which have put the SHEAR-RELIEF Valve on pumps all over the oil world.

FLUID-PISTON SLUSH PUMPS
ABERCROMBIE PUMP CO.
GULF BLDG. HOUSTON TEX.

Showing the high pressure type, for slush pumps.

shots at 5929-5943 feet to test a stray sand above the Gloyd proper. It showed only a small amount of gas and will be deepened to the Young horizon.

Meanwhile Arkansas-Louisiana Gas Company continued testing W. S. Ford 1, Charles Grayson Survey, 5-mile southwest outpost, making about 4 barrels of oil per hour.

Holcomb, Thomasson and associates' Lizzie Henderson 1, R. Bennington Survey, 14-mile southwest outpost, made 127 barrels of oil in 24 hours, after having made 95 barrels in 24 hours through 2 1/32-inch tubing chokes. Casing in this test was perforated at 5980-93 feet, 5945-5948 feet, and 6011-6021 feet.

Dunn & Fisher's Susie Chatten 1, A. de los Santos Coy Survey, Marion County, was completed at 5955 feet, gauging 6,000,000 cubic feet of wet gas daily through 11/64-inch tubing choke.

Arkansas-Louisiana Gas Company is rigging up C. C. Braden 1, Thomas Hanson Survey, Marion County, 2 miles northeast of Jefferson.

R. F. Shaw and Norman M. West of Henderson have filed application with the Texas Railroad Commission for a Rule 37 permit to drill T. B. Christian 1 on an .87-acre tract in the Stephen Smith Survey, Jefferson Townsite, location being given as 105 feet east of west line and 75 feet north of south line of Lots 2, 3, 4, 5 and 6, Block 71.

Hunter Company's E. W. Fonda 1, A. de los Santos Coy Survey, Marion County, is drilling below 9⅝-inch casing cemented at 2069 feet. In the Douglassville area, Cass County, McAlester Fuel Oil Company was drilling below 9⅝-inch casing cemented at 2065 feet. With an elevation of 246 feet this test logged top of chalk at 1917 feet, considered high compared to the nearest tests.

New level shows at Lisbon.

Shreveport.—Possibility of oil production in the upper part of the Glen Rose just below the anhydrite, corresponding to the Hill horizon of Rodessa, in the new Lisbon field, which has 4 oil wells producing from basal Glen Rose, appeared last week when Gulf Oil Corporation's H. E. Patton 1, NE NW SE 36-21n-5w, recovered 24 feet of a 30-foot core cut from 4214 to 4244 feet, some of which showed oil.

However, the hole was reaming down to continue drilling without making a test at this time. E. T. Oakes, H. D. Easton and associates' Patton Estate 1, NE NE 1-20n-5w, drilled before the discovery well of the area, and which was junked, had a similar showing at 4240 feet and it was while arranging to make drill-stem test at this level that the hole was lost.

Of the core in the Gulf well, the top 6 feet was broken anhydrite and lime with oil stains, the next 3 feet was lime, the next 3 feet broken anhydrite and shale, and the last 12 feet lime of which the final 6 feet carried considerable gas. Base of massive anhydrite was 4230 feet.

Gulf Oil Corporation, first major company to spud a test in that field, is following a 10-acre spacing. It is building a pipe line to the field.

Sugar Creek well heads.

Shreveport.—United Gas Public Service Company and associates' Warren Brown 1, SE NE 1-19n-6w, Sugar Creek, that flowed oil for several days before going dead recently, was reopened last week and made a 125-barrel head. It was then shut in to allow further pressure to be built up. Plugged-back depth is 5745 feet in Travis Peak.

United Gas Public Service Company is rigging up to clean out Wheeler A-1, Section 16-18n-16w, Caddo Parish, Blanchard district, that was completed last summer at 5911 feet as a 4,000,000-foot gasser after several better showings. Recently it had ceased to produce. It will be cleaned out and if not revived at 5911 feet casing will be perforated at the Glen Rose horizon.

47 Louisiana Permits

Shreveport.—Forty-seven drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission, of which 31 were for North Louisiana, divided among the following parishes: Bossier, 3, all in Sligo; Caddo, 5, including 3 in Rodessa; Claiborne, 12, all for Lisbon; Franklin 1; LaSalle, 5, all for Urania; Red River, 1; Sabine, 1; Webster, 3, all for Cotton Valley.

The 16 in south Louisiana were divided among the following parishes: Acadia 2, Calcasieu 1, Cameron 1, East Baton Rouge 1, Iberia 2, Jefferson Davis 3, Jefferson 2, Plaquemines 1, St. Martin 1, St. Mary 1, Terrebone 1.

Call Hearing.

Shreveport.—Louisiana Conservation Commission officials last week announced that an open hearing to which all persons interested in oil and gas development in the state north of Township 1 south are invited would be held in the office of Commissioner William G. Rankin at New Orleans at 11 a.m. Monday, April 19. It is regarded as likely that recommendations will be heard as to regulations for various fields in North Louisiana.

At present production regulations for oil wells are in effect in North Louisiana only on the Rodessa and Sligo fields. Only Rodessa has a separate allowable, the others being given a blanket allowable of 22,500 barrels. Lisbon's coming to the front as an oil field and development that may uncover other oil production at an early date has created a new production problem.

Blocking Lincoln tract.

Shreveport.—H. D. Easton, as trustee for a group of eastern operators, has assembled a block of over 3000 acres centering around Section 21-19n-4w, Lincoln Parish, 8 miles southeast of the new Lisbon oil field, Claiborne Parish, and between that field and the Simsboro gas field in Section 10-17n-4w, for a proposed 6000-foot test. Easton is still adding to the block. The spudding date is June 10.

An 8000-foot test in the old shallow Dixie field, Caddo Parish, where Tokio-Woodbine production is found around 2400 feet, is required in leases filed in Shreveport last week by Ben E. Lamb on a 100-acre lease in Section 34-19n-

WHAT?

Maybe you could do business in Venice without riding around in a gondola—but who would want to?

PELICAN

WELL TOOL & SUPPLY COMPANY

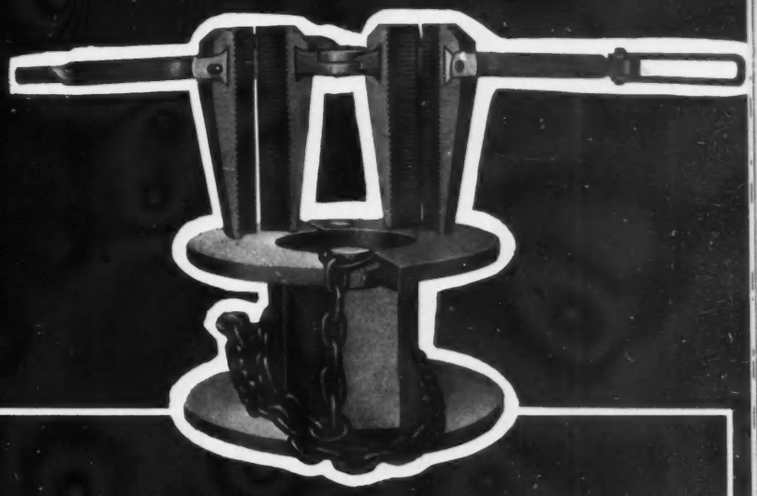
SHREVEPORT, LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe—Cotton Valley—Turnertown—Greggton—Houston

W-K-M

Tubing slips and spiders



QUICKLY PAY YOU BACK WITH MONEY THEY MAKE FOR YOU

W-K-M Tubing Slips and Spider save at least 25% of the time ordinarily required to pull a string of tubing. The result is therefore 25% less labor cost, and also a saving of 25% of the production loss while the well is off. So it's easy to see where this tubing combination readily returns the user's investment, with dividends.

One man can operate the W-K-M Tubing Slip and Spider. There's no lifting, as the slips raise out of the spider when tubing is raised. One elevator is eliminated, and also any possibility of stripping collar threads and dropping tubing is prevented. Because of the uniform pressure against tubing maintained all around, and because of the large bearing area, these slips positively will not swage or cut the tubing. Spider is opened quickly to allow passage of tubing catchers. There are no springs nor small parts on either the slip or spider to cause trouble. They're furnished in Regular and Deep-well Types, to handle all tubing strings, regardless of depths. Operators everywhere know they pay for themselves with the first few barrels of oil saved. Write for Pamphlet No. 320.

We don't say they're non-destructive, but do say you don't have to handle them with care.

W-K-M Company, Inc.

OIL FIELD, PIPE-LINE & INDUSTRIAL EQUIPMENT

HOUSTON, Texas, U. S. A.

Export Office: 74 Trinity Place, New York

Cable Address: "WILKOMAC"

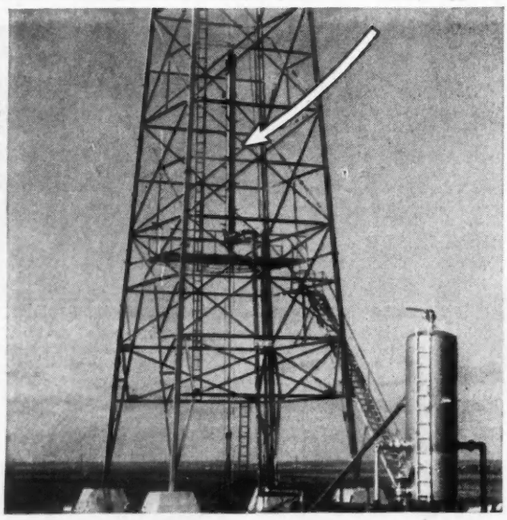
14w which calls for the second test on the lease to go to that level. No requirement is made as to depth of the first well, which must spud by June 15.

A 6100-foot outside test from the northwest offshoot of the Louisiana side of Rodessa is required in a lease taken by C. W. Robinson and associates on 63 acres in NW 3-23n-16w.

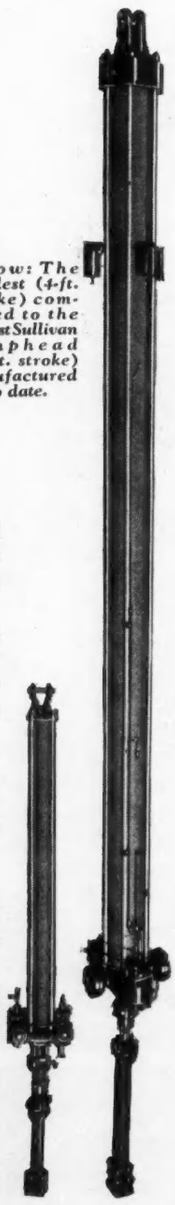
The Texas company has been leasing recently in Township 18 north, Range 5 west, east of Standard Oil Company of Louisiana's block in Township 18 north, Range 6 west, Bienville Parish.

A great deal of leasing continues in the Lisbon area, Claiborne and Lincoln parishes. Turman Oil Company of Oklahoma leased NW SE 1-20n-5w; Sells Petroleum Company of Longview, Texas, took SW NW 29-21n-4w; T. L. James & Company acquired considerable acreage in 21-21n-5w; S. M. Evans leased a 20-acre tract in 21-21n-5w, and an equal amount in 24-21n-5w. L. O. McMillan took two leases, one in 27-21n-5w, and another in 31-21n-4w; Gerhig Oil Company took 6 acres in 36-21n-5w; Gulf Oil Corporation is leasing around the southwest part of the old Haynesville field, Claiborne Parish, Township 23 north, Range 8 west. Shell Petroleum Corporation continues leasing between the old Cartersville and Sarepta fields in Township 23 north, Range 11 west, Bossier and Webster parishes.

ONLY SULLIVAN PUMPHEADS CAN OPERATE LONG STROKES SAFELY



The Type E, 11-inch bore by 15-ft. stroke Sullivan Pumphead suspended in the derrick of a 6700-ft. well.



Below: The smallest (4-ft. stroke) compared to the largest Sullivan Pumphead (15-ft. stroke) manufactured to date.

IT IS generally recognized that a long polished rod stroke is necessary to reduce the magnitude of the vibrating stresses, which in turn, reduces the sucker-rod job frequency.

However, sanding trouble is to be expected. When the plunger sticks, the long polished rod stroke invariably breaks the sucker-rods. But this is not the case, when the Sullivan Pumphead is used. It will stop before it breaks the rods, if the plunger sands up.

Therefore, the Sullivan Pumphead can use whatever stroke is necessary to get the pumping job done. The pull is as straight on the 180-inch stroke, as it is on the 48-inch stroke, and the sucker-rods are protected, at all times, by the giant shock-absorber effect.

SULLIVAN MACHINERY COMPANY
1914 COMMERCE ST. DALLAS, TEXAS

Representatives: **Denver:** 1815 California St., Phone Keystone 6334; **El Paso:** 117 No. Kansas St., Phone Main 757; **Los Angeles:** 2900 Santa Fe Ave., Phone Kimball 5137; **New York:** 30 Church St., Phone Courtland 7-6545; **Oklahoma City:** 532 N. W. Eubanks St., Phone 5-9026; **Tulsa:** 321 Wright Bldg., Phone 3-2250; **Alvin, Texas:** P. O. Box 453, Phone 97; *Executive Offices:* **Chicago, Illinois**

SULLIVAN PUMPHEADS

ARKANSAS FIELDS

New Union producer averages 200 barrels.

El Dorado, Ark.—Lion Oil Refining Company's Morgan 1, Section 18-18-17, Union County, completed recently at 5559 feet in either Travis Peak or upper Permian, continued to average over 200 barrels of oil daily last week through various sized chokes, being entirely free of water. Gravity of the oil is 49 Baume.

For the 24-hour period ending Thursday morning the well made 203 barrels of oil through 22/64-inch tubing choke, with estimated 4,000,000 cubic feet of gas daily. Other 24-hour gauges earlier last week showed the following: 249 barrels through 20/64-inch choke; 224 barrels through 15/64-inch choke, and 289 barrels through same sized choke with casing pressure 1500 pounds and tubing pressure 1625 pounds.

In a series of bottom-hole tests reservoir pressure was found to be 2445 pounds and temperature 173 degrees.

In Columbia County, Magnolia Petroleum Company is adding to its holdings and Ohio Oil Company is reported leasing in LaFayette County.

Standard Pipe Line Company is buying 1400 barrels of oil daily from Benedum & Trees in the Troy field, Nevada County.

Much leasing is going on between the new Schuler well in Union County and Standard Oil Company of Louisiana's block in the same county centering around Section 21-19-16, on which a 6000-foot test is planned.

5 Arkansas Permits

El Dorado, Ark.—Five drilling permits were authorized last week by Arkansas Board of Conservation, as follows:

Miller County—J. M. Burnham and L. B. Manley, Fort Worth, Texas, E. A. Rector 1, 50 feet north and 477.8 feet west SEc fractional Section 17-20-28; E. H. Moore, Inc., Tulsa, Oklahoma, Dale 1, 691 feet north and 455 feet west of the center Section 24-15-26; Dale 2, 1115 feet west and 31 feet north of the center of Section 24-15-26.

Union County—C. E. Travis and V. V. Bull, S. L. Robbins 1, 700 feet west of the east line and 330 feet north of south line, SW NE 12-19-16; Marine Oil Company, M. Justiss 1, 330 feet east and 330 feet north SWc Lot 7, NW 18-18-17.

Rules for Schuler

El Dorado.—The Arkansas Board of Conservation, in special session, last week adopted rules governing drilling in the new Schuler area, Union County, Arkansas, opened by Lion Oil Refining Company's Morgan 1, Section 18-18-17, completed as a large oil well at 5559 feet.

The Board of Conservation decided that not more than one well for each

10 acres will be allowed, and wells must be located at least 330 feet from the property line, or in the center, of the 10-acre tract. Any operator who seeks to drill on less than 10 acres must file formal application with the board of conservation which will keep the application at least 10 days with due notice thereof being made, and if no formal objection is filed may issue the permit.

North Offset Rigging

A north offset to the Lion Oil Refining Company's discovery oil well was being rigged up last week by Marine Oil Company of El Dorado for M. Justiss 1, 330 feet north and east of SWc Lot 7, NW¼ Section 18-18-17. Spacing rules having just been announced, several other tests are expected to be made at once.

During the 24-hour period ending at 7 a.m. Wednesday, April 14, the discovery well flowed 299 barrels of oil through 22/64-inch tubing choke and was making an estimated 4,000,000 cubic feet of gas daily.

Arkansas oil men are hailing the Shuler well as the most important discovery in that state since Smackover.

Shreveport.—Gulf Refining Company, pipe line division, is building 8½ miles of six-inch welded lateral line from its Arkansas-Port Arthur trunk line to tap the Lisbon-Oakes field, Claiborne Parish, Louisiana, which has four oil producers in basal Glen Rose lime nera the 5300-foot level.

SOUTHEASTERN STATES

Hattiesburg test appears favorable for flank oil.

Hattiesburg, Miss.—Sun Oil Company and Wanette Oil Company's Talley 2, 33-4s-15w, third test for the piercement type of salt dome in Lamar County, 16 miles west of Hattiesburg, appears to be favorably situated to try for flank production. Drilling was in progress at 2115 feet, according to late reports, and at 2000 feet paleontological analysis of cores revealed that the Wilcox sand section had not been reached. Formations are reported to be thickening and checking more than 100 feet lower structurally than Talley 1, C SE SW 28-4n-15w, which logged top of cap rock at 1995 feet, or 1610 feet sub-sea, and was abandoned after losing returns at 2015 feet. The partnership's Scanlan-Semmes 1, C SW NE 28-4n-15w, logged solid salt at 2522-4024 feet, with an elevation of 317 feet.

Will Perforate for Gas

Jackson, Miss.—State of Mississippi's Fee 2, NWc NW 25-6n-1e, Hinds County, Jackson gas field, was drilled to 5529 feet, 5500 feet being contract depth, and operators are now backing up the hole to set 2900 feet of 7-inch casing which will be perforated at several levels on the strength of an electrical tester's log. If production is not found at the perforated points, efforts will be made to complete at the Midway chalk level of the Jackson gas field around 2400 feet. Bottom of the hole is identified as a non-marine section of the basal Trinity. Elevation is 3265 feet.

E. R. Owen was the drilling contractor, drilling three tests on the state's 1320-acre lease in the Jackson field. Two of the tests were gassers at the regular shallow horizon.

The southeastern part of Mississippi continues to be an active leasing center. The Texas Company, Sun Oil Company, and Gulf Oil Corporation are taking leases in Perry, Stone and Greene counties.

The California Company has a seismograph unit working in Township 10 north, Range 7 east, Copiah County south Mississippi, and Southern Natural Gas Company still has a geophysical unit working in Hinds County near Edwards, in Township 12 north, Range 4 west.

Seeks Crude Tax

Tallahassee.—Taxation of crude oil used in motor trucks in Florida will be sought by Governor Cone. "I am informed there are many big trucks which operate on this kind of fuel after using a little gasoline to get started," the governor said, adding that he would ask the legislature for authority to put a levy on crude oil used in motor vehicles. Gasoline is taxed 7 cents a gallon by the state.

Trouble-Free JENSEN JACKS

Producers using JENSEN Straight-Lift JACKS are invariably enthusiastic about the dependable, trouble-free way these pumping units get the job done.

For nineteen years we have done nothing except design and improve pumping equipment, always with the interested, expert cooperation of successful producers. Small wonder JENSEN JACKS are so far ahead of ordinary equipment! Every working part has gone through the changes and adjustments necessary to make it work smoothly and stand up indefinitely under the most trying conditions.

You can spend more for pumping equipment, but you can't buy better equipment than JENSEN Straight-Lift JACKS. Before you put another well on the pump . . . . . *see your JENSEN dealer or wire us at Coffeyville.*

JENSEN BROTHERS MANUFACTURING CO.

Coffeyville, Kansas, U.S.A.

Sandy-lime belt due to get more development.

* * *

Eunice well flows 99 barrels of oil per hour.

* * *

Monument producer gets too much gas with oil.

Hobbs, N. M.—Closely related chains of oil fields in the sandy-lime belt parallel to the east line of Lea County are beginning to receive a greater volume of drilling activity since field work is due to taper off in the Monument and Eunice fields. The Penrose, Mattix and Langlie areas were credited with 7 new operations the past week, or the same number of new locations as reported in the above 2 dolomite lime fields. Total locations for the week were boosted to 15 by the staking of an outpost for the South Jal lime zone. There were 11 completions, all oil producers, in Lea County the past week.

Development of the sandy-lime belt has been held in check by operators engaged with large drilling programs in the lime areas. Now that the peak volume of drilling at Monument and Eunice has passed, the companies are content to go after the less prolific and somewhat erratic production afforded by the long stretch of sandy-lime formation, extending in a general north and south direction from the south line of the county to a point opposite the south portion of the monument area.

The Texas Company, Ajax Drilling Company et al's J. P. Alexander 1, Lot 4, 5-21s-37e, semi-wildcat near the north end of the sandy-lime producing belt, filled 100 feet with cavings after 160-quart nitro shot at 3704-3755 feet, with an elevation of 3490 feet. This outpost has been in process of completion since mid-March, and prior to shot swabbed 35 barrels of oil in 2 hours. Four new operations have been authorized for the Penrose area, located south of the town of Eunice. Landreth Oil Corporation has started operations on E. H. Grizzell 2, C NE SW 5-22s-37e, involving a north offset to the company's completed producer. Humble Oil & Refining Company's J. L. Greenwood 1, C SE SE 9-22s-37e, is 1½ miles from nearest production to the north and south. Continental Oil Company et al's Elliott 2-A-21, C SW SE 21-22s-37e, and Tide Water Associated Oil Company's Walden 3, C NW NE 21-22s-37e, are new tests that offset completed wells. The Texas Co.'s Falby 1, C NE NW 8-22s-37e, has installed tubing to test at 3750 feet, having started operations on March 17.

Stanolind Oil & Gas Company has made location for C. Myers 4, C SE SW 22-24s-37e, and C. Myers 5, C SE NW 22-24s-37e, offsetting production in the Mattix, or northeast Jal area. This concern has also authorized the drilling of P. J. Langlie 1-A, C SW SW 9-25s-37e, offsetting the discovery oil well in the Langlie, or east Jal area. Sun Oil Company's I. R. Stuart 2, C SW NE 15-25s-37e, logged oil saturation at 3341-3383 feet, with an elevation of 3106 feet, and was preparing to test late last week. Top of sand zone was recorded at 3315 feet. It is 18 feet lower structurally than the company's Stuart 1, north offset producer, and equal distance higher than the west offset. Magnolia Petroleum Company's Hanna 1, C SE NE 7-26s-38e, wildcat in extreme southeast portion of the county, was halted at 938 feet for water. It is one of the most difficult locations to reach because of the surrounding acreage being covered with shifting sands.

Continental Oil Company et al's Mc-

BALDWIN
SUPER SERVICE
AND Full Flex
OIL FIELD CHAIN
ask the Driller .. He Knows

Factory Representative: Geo. J. Fix, Dallas, Texas.
FOR SALE IN ALL OIL FIELDS

NEW MEXICO
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
LEA COUNTY (Eunice Field)—		
Amerada, Stae 4-W, c sw nw 30-20s-37e	150	3820
Continental, State 8-D-15, c se se 15-21s-36e	3600	3854
Humble, State-Aggies 12, c se ne 31-20s-37e	1000	3835
Texas Co., State-Aggies 5, se ne se 31-20s-37e	400	3855
LEA COUNTY (East Jal Field)—		
Repollo, R. L. Mosley 1, nw sw se 34-24s-37e	270	3490
LEA COUNTY (Monument Field)—		
Amerada, H. F. Andrews 6, c sw sw 12-20s-36e	300	3873
C. H. Weir 8, c nw nw 35-19s-36e.	1500	3960
Continental et al, Sanderson 3-A-11, c se se 11-20s-36e	750	3871
Gulf, State-Orcutt 1-D, c nw ne 13-20s-36e	800	3876
Humble, M. E. Laughlin 5, c nw se 4-20s-37e	500	3880
Phillips, Britt-Mexico 2, c sw ne 18-20s-37e	3500	3850

*Failures; †Junked; ¶Million cu. ft. gas.

Callister A-24, C N½ NE SE 24-26s-36e, offsetting production in the south Jal area, failed to attain water shut-off in plugging back from 3245 feet to 3224 feet, with an elevation of 2942 feet. Production test at the plugged-back depth showed 10 barrels of fluid per hour through 13/64-inch choke, with about 30 percent sulphur water. The Texas Company et al's C. W. Shepherd 4-B, C SE 5-26s-37e, is an outpost operation.

Illinois Oil Company and Continental Oil Company et al's Alston 1, C SW NE 31-17s-37e, 5½ miles northwest of Hobbs field, has changed to cable tools after cementing 8⅝-inch pipe with 1000 sacks of cement at 2020 feet.

Makes 99 Barrels Per Hour

Rated as one of the largest completions for the week, Continental Oil Company's State 8-D-15, C SE SE 15-21s-36e, inside location near east edge of production in the Eunice lime area, gauged 99 barrels per hour natural through ¾-inch choke from lime at 3854 feet, or 280 feet sub-sea. Ohio Oil Company's State-McDonald 5, C SE NW 16-22s-36e, offsetting production in the south portion of the field, failed to uncover oil or gas in attaining a depth record for the county at 6202 feet, and has plugged back to 3820 feet to try for oil or gas production. Gulf Oil Corporation has started operations on the following new locations: Mollie Campbell 4, C NW SW 7-21s-36e; State-Bell 2-E, C NE NW 11-21s-36e; and W. W. White 3, C SE NE 25-20s-36e, all offsetting production.

Amerada Petroleum Corporation's State 4-W, C SW NW 30-20s-37e, located on north end of Eunice lime area, has been completed flowing 95 barrels initial through ½-inch choke after triple acid treatment at 3820 feet. The Texas Company's State-Aggies 5, SE NE SE 31-20s-37e, tested 200 barrels oil in 14 hours through open tubing after using acid in lime at 3740-3855 feet. Atlantic Refining Company has moved in rig to drill its State "O" lease, embracing W½ NW 32-20s-37e, with two direct west offsets on production.

Too Much Gas

An excessive volume of gas was encountered by Continental Oil Company's State 1-C-16, C SW NW 16-20s-37e, near southeast edge of Monument area, in cementing 5½-inch pipe at 3656 feet. Production test through casing with drill pipe in hole at 3762 feet yielded 13½ barrels of oil in 30 minutes, but the well made dry gas during the remainder of a 2-hour test. It was deepened to 3793 feet, or 255 feet below sea level, and blew out with a prolific flow of gas and no oil. Gas volume was rated at 35,000,000 feet daily through 1¼-inch choke. Amerada Petroleum Corporation's J. R. Phillips 4, C NW NE 1-20s-36e, developed heavy flow of gas below the regular 7-inch casing seat, and the company has cemented a smaller string in order to exclude the big gas flow.

Humble Oil & Refining Company's Laughlin 5, C NW SE 4-20s-37e, located on east edge of Monument field, was completed at 3880 feet, with an elevation of 3564 feet, flowing 20 barrels per hour average for 4 hours through ½-inch choke, using flow valves. Continental Oil Company et al's Sanderson 5-A-11, NE SE SW 11-20s-36e, is a new test for the southwest edge of the field. Phillips Petroleum Company started operations on Britt-Mexico 3 C SE NE 18-20s-37e, and Britt-Hobbs 2, C NW SW 18-20s-37e. Gulf Oil Corporation's Theo Anderson 8, C SW NE 17-20s-37e, is also listed among recent locations.

Contracts 52 Wells

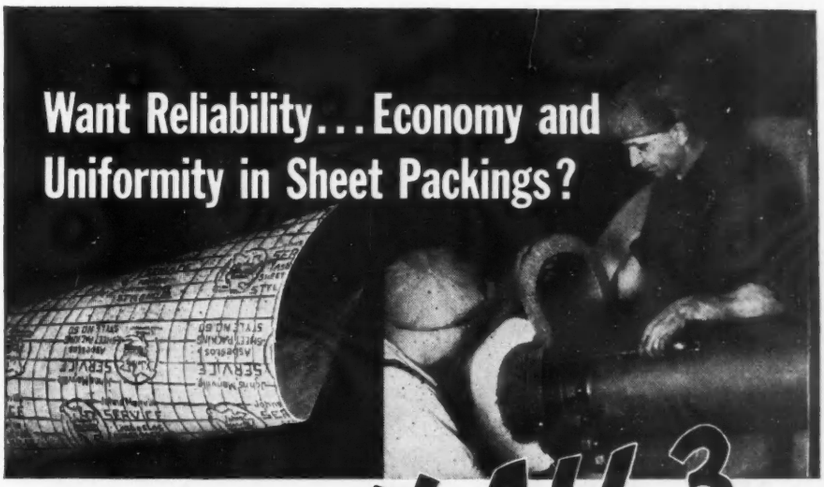
Tulsa.—E. A. (Ed) Landreth, head of the Landreth Production Corporation of Fort Worth, Texas, awarded contracts for drilling 52 wells in the Goldsmith area of Ector County, Texas, while in Tulsa last week. Companies receiving the awards include Olson Drilling Company, Arrow Drilling Company, and Gooden Drilling Company.

Negotiations are also under way to merge the Landreth interests into one company to be known as the Landreth Oil Corporation, having a capital of $4,000,000 and a par value of $100 on all common stock.

UNIVERSITY TO LEASE

Austin.—The Texas Legislature approved last week and sent to the governor's desk a bill, S. B. 343, which will allow University of Texas to auction leases on its oil and gas lands.

The bill passed the House as an uncontested bill and met with slight opposition in the Senate.



You get ALL 3

in J-M SERVICE SHEET (Style No. 60)

SHEET PACKING worthy of its name must offer dependability and economy in use on a wide variety of service conditions. And there must be no variation in quality from one shipment to the next.

To this rigid standard J-M Service Sheet (Style No. 60) is designed and manufactured. Over sixty years of experience go into its making . . . into its carefully guarded uniformity.

Made of selected long-fiber asbestos and special heat-resisting compounds, J-M Service Sheet has a record for outstanding performance on flanges and other parallel surfaces against superheated or saturated steam . . . against gas, oil, air, water, ammonia, certain acids and alkalies.

• • •

Have you a copy of our latest packings catalog on hand for quick reference? It describes the complete line of J-M Materials—designed to meet every specific packing need in your plant. Simply write Johns-Manville, 22 East 40th Street, New York City.

Johns-Manville PACKINGS AND GASKETS

ROCKY MOUNTAIN FIELDS

Litigation and results in new work for Hidden Dome.

* * *

Testing lower Basal Sundance at Lance Creek.

* * *

Tight formations slow up Gooseberry Dome wildcat.

Casper, Wyo.—Hidden Dome field, Washakie County, north central Wyoming, moved into prominence in the Rocky Mountain Region this week. A legal battle involving two of the active operators in the field, Charles Brome and J. W. Bales, was settled during the week and the drilling activity in the field took an immediate up-swing.

Five active wells are reported this week in the field. Three are first reports, while the other 2 are drilling wells which have just recently resumed after the winter shut-down. The 3 new wells in the field are Yale Oil Corporation's 2, E SE SE 25-48n-91w, which is a location; Bruce Teeter's 5, S SW SW 30-48n-90w, which is drilling at 100 feet after setting the surface string of 10-inch casing at 85 feet; and Wyoming Oil & Refining Company's 8, NW NE NW 31-48n-90w, which has cemented 10-inch surface string at 79 feet and is drilling ahead at 200 feet.

Wyoming Oil & Refining Company's 7, SW NW NW 30-48n-90w, being drilled with standard tools, is making hole in blue shale at 710 feet. The surface string of 10-inch casing was set last fall before the shut-down at 87 feet.

Resuming drilling operations this week, Christionsen & Thorne's 3, NW SW SW 31-48n-90w, is drilling ahead below 860 feet in shale.

Lance Creek Activity Steady

Lance Creek activity was steady this week. Ohio Oil Company's Putnam 6, NW NW 4-35n-65w, being deepened further into the Basal Sundance formation to increase production, is at critical stage. Well drilled out of the Basal Sundance formation at 4060 feet, was carried 5 feet into the red beds, where it bottoms at 4065 feet. A test of the lower level of the Basal Sundance is being run. Company first established feasibility of boosting production in Lance Creek producers by deepening further into the Sundance production level with Lamb 9. This well was deepened by some 27 feet with a resulting gain in initial rating of 60 percent. The production rate of the well was raised from slightly over 400 barrels daily, its initial production when originally completed in February of this year, to nearly 700 barrels daily. The company's Putnam 8, SW SE SW 33-36n-65w, topped the first Sundance at 3835 feet and is drilling ahead in shale break at 4025 feet.

Well Earns 2000-Barrel Potential

An official test of Continental Oil Company's Schuricht 3-B showed the well to have a potential of over 2000 barrels. It is an inside location in the southeastern sector of Lance Creek. Unconfirmed reports indicate the company will start another well in the field, possibly as an east offset to Cobb & Holly's Nat Novick 1, completed several weeks ago.

J. M. Huber Corporation suffered another setback on Midwest 1, SE SW 27-36n-65w, an old gas well deepening as an east extension test of the Sundance production pool of Lance Creek. The operators have twisted off drill stem at 3897 feet and are fishing.

An outside location on the southwest side of Lance Creek, Mackinnie Oil & Drilling Company's Thompson 2, NWc NW NE 7-35n-65w, is waiting on equipment. The well is a south offset to Nat Novick 1, which extended the field a quarter of a mile west in February.

Progress Slow on Important Wildcat

Development on what is currently Wyoming's most promising wildcat well has been delayed to date by the unusually tight formations encountered in the well. The well, General Petroleum Corporation's Government 1, NW NW NW 33-47n-100w, on the Gooseberry Dome structure, Park County, northwestern Wyoming, encountered saturation in Embar formation at 5660 feet, but the formation is too hard to yield production. An excellent idea of the conditions of the formation can be obtained from the fact that the 4-inch cores recovered from the hole two months ago still show oil bubbles when cracked, illustrating the fact that the pressure has not been relieved even in the 4-inch core after the two-month period. The test may be carried to the Tensleep.

Spring weather finally arrived in La Barge field, Lincoln County, southwestern Wyoming, this week, and opened drilling operations in another well which has been shut down since fall. L. W. Davis 1, SE SE SE 9-26n-116w, has run 10-inch casing to 780 feet and is drilling ahead at 800 feet to find a solid formation on which to set casing for water shut-off.

Empire State Oil Company's Unit 3, SE NE 33-34n-84w, old producer being deepened to the Tensleep formation, is nearing a critical depth at 2490 feet. Tensleep objective is expected around 2600 feet. The well is in the South Casper Creek field, Natrona County, central Wyoming.

In Powder Wash, Moffat County, northwestern Colorado, Mountain Fuel Supply Company's J. C. Donnell 1, NE SE 31-12n-97w, is drilling below 3000 feet. The only other active well in the Tri-State Basin area, Anderson-Kerr Drilling Company and Phillips Petroleum Company's Government 1, C SE SE 19-9n-99w, on the Dry Mountain structure, Moffat County, has underreamed 10-inch hole to 15½-inch and run 12½-inch casing to 1240 feet.

Deepening Largest Producer

Ohio Oil Company's Diamond Cattle Company 6, NW NW 35-20n-78w, at one time the largest producer in Rock River field, Carbon County, southern Wyoming, is being deepened from its Dakota production level of 2932 feet to the Sundance horizon. The test is drilling below 3096 feet.

The California Company and Ohio Oil Company's Wm. Kyle 2, C SE SE 26-21n-79w, Big Medicine Bow field, Carbon County, southern Wyoming, is drilling at 4668 feet. Their Union Pacific-Cronberg 4, C SW SW 25-21n-79w, is drilling at 3937 feet. The field is operated jointly by the two companies on an equal share basis for expenses and products.

In northern Wyoming, Ohio Oil Company's State 1, NEc 35-55n-97w, Byron field, Big Horn County, is deepening into the Tensleep formation at 5450 feet. The test had oil shows in the Embar at 5332-5410 feet which were acidized but tested unsatisfactory. The company's Baker-Byron 2, SE NW 23-56n-97w, is drilling at 5110 feet in red beds.

MOUNTAIN STATES
Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
GLACIER COUNTY (Cut Bank Field)—		
Kately & Drumheller, Ward 5, lot 4 10-34n-6w	15	2910
YELLOWSTONE COUNTY (Mosser Dome Field)—		
R. C. Tarrant, Kelly 1, se se nw 26-35n-23e	70	1017

WYOMING

Company, Well and Location	Init. Prod. Bbls.	Depth
NIOBRARA COUNTY (Lance Creek Field)—		
Continental Oil Co., Schuricht 3-B, cse¼ se 6-35n-65w	2000	4071

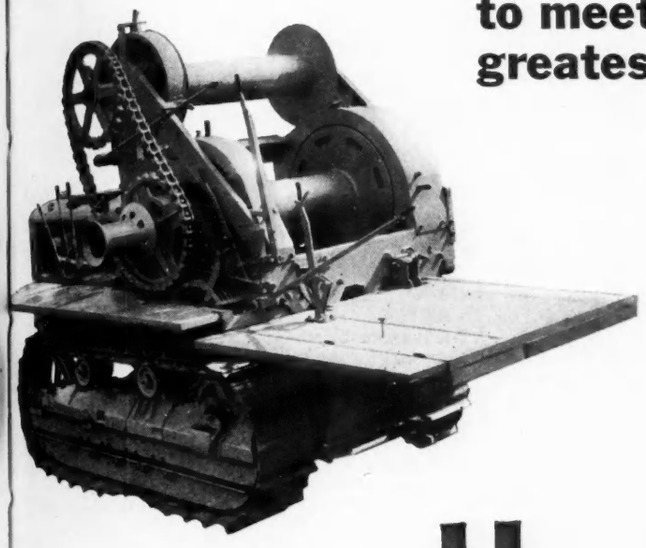
*Failures; †Junked; ¶Million cu. ft. gas.

Milwaukee.—The Wisconsin Petroleum Association last week joined with other state petroleum groups in a drive to have the federal gasoline tax of 1 cent a gallon abolished. The tax was enacted in 1932 as an emergency income. The association will urge the Wisconsin legislature to adopt a resolution memorializing congress not to renew the tax law which expires in July.

Make HOPPER PORTABLE HOISTS AND DRAW WORKS

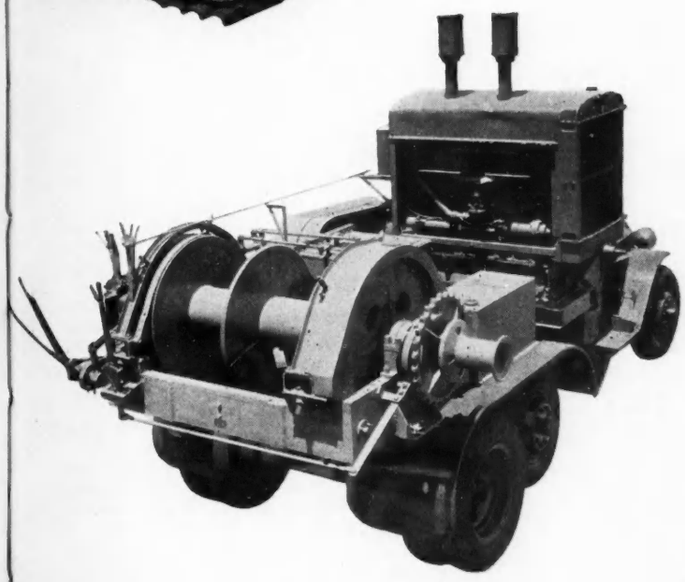
Standard Equipment on Your Lease

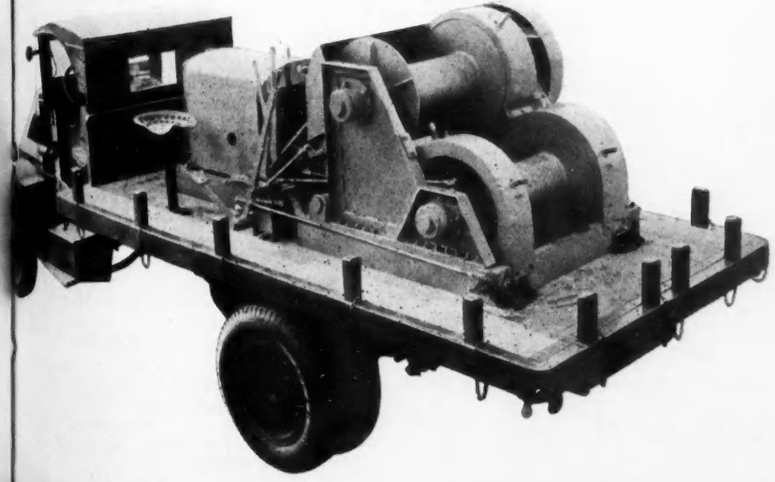
There is a TYPE · a SIZE · a MOUNTING to meet your particular requirements with greatest economy and maximum efficiency



Hopper Portable Hoists and Draw Works provide for complete servicing of wells to any depth; for drilling to 5000 feet and for other rotary operations. ● They are supplied with or without Rotary Drive and Sand Reel Attachments; are made in sizes from 36 h.p. to 300 h.p.; and are powered by gas engine, Diesel or electric motor. ● Hopper Equipment can be furnished to be self-powered; or mounted on tractor, truck or trailer; or built on skids for mounting in field shops.

SEND FOR DETAILS.





The nearest HOPPER representative will be glad to furnish you with complete details and specifications on the type of hoist to meet your requirements.

Mid-Continent and Gulf Coast Sales

AMERICAN IRON & MACHINE WORKS COMPANY

OKLAHOMA CITY — SEMINOLE, OKLA.
HOUSTON, TEXAS — KILGORE, TEXAS

California Sales

PETROLEUM EQUIPMENT CO.

2800 SO. ALAMEDA STREET
LOS ANGELES — CALIFORNIA

Foreign Sales

R. J. EICHE

c/o Hopper Machine Works, Inc.
BAKERSFIELD — CALIFORNIA

South America

GEO. S. FLANDERS — MARACAIBO

There is a HOPPER PORTABLE HOIST for every need

CALIFORNIA FIELDS

Wilmington has 28 drilling tests and 52 locations.

* * *

Using 9566 feet of 1½-inch drill pipe in wildcat.

* * *

Prospects of price increase are dampened.

Los Angeles.—The new Wilmington field in Los Angeles County has 28 actively drilling wells and 52 rigs and locations. During the past week, there were 10 completions, with a total of about 8000 barrels of flush production. Three of the new wells came in for 1000 barrels or more. The first well completed on Ford Motor Company's 40-acre tract was good for 2200 barrels of 21.7 gravity oil, cut 3.4 percent, from 3590 feet. Four other wells are drilling on the Ford property, all nearing completion, and rigs are up for five more holes. This well was drilled by General Petroleum Corporation and is the largest well so far for the field.

Three oil zones in Wilmington have been proven for production. The two upper zones above 2500 feet produces low gravity oil. The next zone is around 3500 feet, and is the sand now being developed, producing oil of about 22 gravity. Another lower and untested sand was picked up at about 6500 feet. An attempt will be made during the life of the field to produce all of the present known sands, but the deepest will come last.

Terminal Area Richest

What is known as the Terminal area is proving to be the most prolific part of the field and there is already talk of whip stocking some of the wells to points under a part of the ship channel separating the mainland and Terminal Island. Several derricks in the field are partially enclosed to protect certain property should a well blow out. But since the pressures are not very high, there is little danger of this.

One of the interesting wildcat tests in California at this time is Continental Oil Company's Kern County Land Co. A-1, Section 8-27-24, in Kern County, where 1½-inch drill pipe is being used through the old four-inch drill pipe, which froze in the hole. At last reports, bottom of hole was 9566 feet and the small bit is making fair progress. As far as is known, this is the longest string of 1½-inch drill pipe ever run at this extreme depth, and the outcome will be watched with more than usual interest.

In Dominguez field near Los Angeles good wells are being completed in spite of the age of the field. Union Oil Company's Callender 53 has been completed at 7750 feet and started flowing at the daily rate of 2160 barrels of 30.3 gravity oil cutting only 4 percent. The flow is cleaning up, and the oil is accompanied by 1,750,000 cubic feet of gas. Union's Carson 9, depth 7555 feet, is another late completion, with an initial production of 465 barrels of 29.9 gravity clean oil. The company is drilling three other holes in the field and has staked three locations. Callender 50 is drilling and coring at 10,340 feet in sand and shale, being one of the four wells in the state below 10,000 feet. String of 8⅝-inch casing was cemented in this hole at 6860 feet.

Shell Oil Company is also drilling three wells at Dominguez, Reyes 90 now being bottomed at 8672 feet in shale and oil sand. Last casing in this well was 11¾-inch cemented at 3920 feet. In most instances 13⅜-inch is landed at about 1000 feet, then 11¾-inch cemented at about 4000 feet, and 8⅝-inch landed around 6700 to 7100 feet.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
KETTLEMAN HILLS—		
Kettleman North Dome, No. 36-28J	2800	8095
Standard, No. 8-19J	1000	8500
KERN FRONT—		
Standard, No. 5	130	2810
Tide Water Associated, No. 42	100	2200
LOST HILLS—		
Texas Co., Theta 2	40	1147
MIDWAY SUNSET—		
C. C. M. Oil Co., No. J-1	75	2200
Standard, No. 7-33D	750	3155
No. 123-33D	700	3140
Union, Williams 5	675	2050
MOUNTAIN VIEW—		
Hogan Pet. Co., Wharton 8	600	5886
Trico Oil & Gas Co., Wilson 2	*	5047
PREMIER—		
Golden Bear Oil Co., Grimes 6	300	2670
ROUND MOUNTAIN—		
Honolulu Oil Corp., No. 25	200	2223
SAN MIGUELITO—		
Continental, Grubb 6	1790	6800
SANTA MARIA—		
Union, Squires 17	200	3817
KERN COUNTY—		
Tide Water Associated, K. C. L. 1	*	9000
British American, Smith 1-A	*	750
SANTA BARBARA COUNTY—		
G. Erickson, Dart 1	*	3282
SAN LUIS OBIPSO COUNTY—		
A. T. Jergins Tr., Indian Knob 1	*	2390
INGLEWOOD—		
Standard, L. A. Inv. 82	750	3951
RICHFIELD—		
Union, Coyle 8	190	3413
WILMINGTON—		
Crail Bros., MacKallister 1	420	3550
Geo. F. Getty, No. W-4	450	3595
No. W-6	1100	3515
Ring Oil Co., No. 1	200	3725
Royalty Service Corp., Com. 2	300	3680
No. 21-5	275	3050
Union Pacific Ry. Co., Offset 1	1960	3556
Offset 2	800	3576
Offset 3	825	3537

*Failures; †Junked; ¶Million cu. ft. gas.

Drill Discovery Deeper

In the new Ten Section field in Kern County discovered by Shell Oil Company, the discovery hole has been killed and is being drilled deeper. The well was making a lot of gas under high pressure and the hole is to be recompleted to case off the high gas pressure.

Another disappointment for the Arvin area in Kern County is the picking up of granite in Bear Mountain Oil Company's Tejon 2. This wildcat is located in Section 16-31-30.

Rumors were circulated in Los Angeles last week that General Petroleum Corporation and Bandini Petroleum Company plan deep tests for Santa Fe Springs, but officials of both companies denied they had such plans, at least for the present drilling wells. Union Oil Company's Bell 100 in this field, bottomed at 10,789 feet, is cutting and removing the stuck drill pipe. There still is 5990 feet of pipe in the hole, and after removing all of the drill possible, the remainder will be sidetracked and more hole drilled. It is understood officials are determined to drill as deep as 12,000 feet, if it is possible.

Kettleman Hills early in the month exceeded its daily allowable of 78,545 barrels due to completion of three new wells. Kettleman North Dome Association completed No. 36-28J for 2800 barrels at 8095 feet and No. 85-32J for 1700 barrels at 8500 feet. Standard Oil Company's No. 8-19J, Section 9-28-27, came in for 1000 barrels at 8500 feet. Only 13 wells are drilling in the North Dome and one on the Middle Dome.

Next to the Wilmington field in Los Angeles Basin, the Midway-Sunset area is the second busiest in the state with 32 wells drilling and 10 rigs and locations. This area is made up of a number of small fields, close together. It includes the Lake View field, where there is considerable activity.

The Central Committee backed away from its April allowable of the state, which had been fixed at slightly more than 600,000 barrels a day, and fixed a new daily quota of 580,000 barrels, since the purchasing companies felt the greatly increased allowable would give them more crude than they cared to purchase at this time. Production for the period from April 3 to 9, inclusive, averaged 626,957 barrels a day, according to an estimate by the umpire's office. This represents an overage of slightly more than 46,000 barrels.

Price Boost Prospect Dampened

The large production for the first part of April may kill any idea of an early increase in the posted price of crude in the state. California operators as a whole seem determined to produce more oil than the official quota calls for. For three days daily production averaged slightly better than 632,000 barrels. Many of the oil company executives feel that a raise in price could be expected if daily production could be held to about 600,000 barrels a day, or under. What is in store with refer-

U.S. PACKING
SLUSH PUMP GLAND RINGS
FLUID END
TO FIT SIZE OF PUMPS LISTED BELOW
ACME 14 x 7¼ x 16"
ACME 14 x 7¼ x 14"
ACME 15 x 7¼ x 18"
GARDNER 14 x 7¼ x 14"
GARDNER 14 x 7¼ x 16"
GARDNER FXQ x 7¾ x 16"
GARDNER 14 x 7¾ x 18"
GARDNER PWR. x 7½ x 14"
GARDNER FXQ x 7 x 14"
JOHNSON Type J 12 x 6¾ x 16"
LUCEY H—10,000 12 x 6¾ x 14"
LUCEY I—1,000 12½ x 6¾ x 14"
STYLE 4480
SIZE J
WEIGHT 5 LBS.
QUANT.
United States Rubber Products, Inc.
MADE IN U.S.A.

BORN OF COMMON SENSE

THIS package is making oil field sales history! To the uninitiated it's just another labeled carton. But to gang pushers, roughnecks, and supply store managers it represents: Lowered overhead; accelerated production; reduced inventories; time saved and profits made!

Why? Simply this: Never before have rotary drilling packings been sold with identifying labels that state so clearly and accurately the names and sizes of all the pumps for which each packing set is designed. For the convenience of the oil industry the new U. S. label furnishes that essential information. Thus the whole system of oil field packing purchase and application has been simplified, put in order, and made easy by U. S.

A simple, logical improvement born of the practical oil man's common sense—and the understanding of oil field needs that is typical of U. S. In fact, just another example of—

SERVICE BEYOND PRICE AND SPECIFICATIONS

United States Rubber Company

United States Rubber Products, Inc., New York, N. Y.

EASTERN FIELDS

West Virginia gas well second largest in state.

* * *

Calhoun County test reaches Corniferous and caves.

* * *

Activity increasing in Illinois and Indiana.

Pittsburgh.—Columbian Carbon Company completed the second largest West Virginia gas well during the past week on the Ida Hughart farm in Elk district, Kanawha County. Drilled to 5057 feet and shot with 120 quarts, it gauged 15,500,000 feet a day. It is outranked only by the original test on the Ahaz Spencer farm, Poca district, which gauged close to 17,000,000 feet a day when brought in.

Other Elk district operations of Columbian Carbon Company consist of eight drilling tests, one each on the James R. Jones, J. C. Jordon, Minia F. Stauffer, W. L. Burdette, R. L. Wolfe, John Summers, Jr., Samuel G. Jones, and Octavia Pauley farms.

George W. Lepiere is a few feet in the Oriskany sand, which was topped at 4800 feet, in the test on the J. W. Legg farm, Poca district, Kanawha County, while Godfrey L. Cabot, Inc., has a rig standing for a test on the Sarah Ann Null farm, Union district, and another for a western test on the J. E. and M. D. Good farm, Poca district.

Among other Kanawha County Oriskany sand tests, Columbian Carbon Company has a location for a test on the Mandy Wolf farm, Elk district, just north of the G. M. Wolf farm, elevation 969 feet, and another location on the W. D. Lewis tract. offsetting the South Penn Oil Company's Kate Scott 2, Malden district. The United Fuel Gas Company made a location on the George Creek Land & Mining Company lease, Malden district, which will offset the South Penn Oil Company's Kate Scott 3.

Deep Test in Corniferous

Godfrey L. Cabot, Inc., and others have reached an interesting stage in their deep test on the Allen Hardman farm, Center district, Calhoun County, West Virginia. It topped the Corniferous lime at 5994 feet, sand line measurement, and is located about 3 miles west of Grantsville, just west of Bee Creek, and is on the west flank of the Arches Fork anticline, the axis of which passes through Grantsville. Numerous cavings brought a shut-down to run casing after the tools penetrated the Corniferous 22 feet.

Carnegie Natural Gas Company has started a rig for an Oriskany sand deep test on the W. C. Patterson farm, Burning Springs district, Wirt County, West Virginia. The test is on the Elizabeth Quadrangle, latitude 39 degrees 14.2 minutes, longitude 81 degrees 18.2 minutes, .15 of a mile up the small creek which empties into Beaver Fork. It is on the Burning Springs Anticline, 2.1 miles north, 4 degrees east of the Glen W. Roberts et al test on the Rathbone Oil Company tract. This latter test found salt water in the Oriskany sand and is now drilling deeper at about 5300 feet. The elevation of the new test is 869 feet.

In this same district, Godfrey L. Cabot, Inc., has reached a depth of 5308 feet in the outside deep test on the Walter Hoffman tract where a cave is now being cemented. John T. Galey is drilling at 4300 feet on the outside deep test on the Rachael Talbott farm, Grant district, Hancock County.

In Southwest Pennsylvania, the wildcat deep test of William Snee et al on the Summit Hotel lease on Chestnut Ridge, South Union Township, Fayette County, recovered a bit lost at 6665½ feet and shut down temporarily. The gauge of gas increased about 100,000 feet during the week to 800,000 feet a day.

Expect Oriskany Soon

The test of American Natural Gas Company and T. W. Phillips Gas Company on the Perry S. Davis farm, 1 mile south of Prospect, Franklin Township, Butler County, is due in the Oriskany sand this week. After recovering a bailer lost in the hole, it was drilling below 5515 feet. The top of the Corniferous lime was at 5420 feet.

Two Southwest Pennsylvania tests were completed during the week Equitable Gas Company started deepening operations on the C. L. Stewart 1, Center Township, Greene County, from 1996 feet. When drilled down to 2054 feet, the gas at 1961-1975 feet increased to 126,000 feet a day and work was postponed to use the gas. R. M. Duden et al completed a test on the McDowell Heirs farm at 2325 feet. Located in Peters Township, Washington County, it gauged a million feet a day from the Thirty-Foot sand. The Big Injun sand was at 1506-1679 feet; Gantz sand at 2157-2192 feet, and the Fifty-Foot topped at 2197 feet. Shut-in pressure at the end of 3 minutes was 125 pounds, which increased to 500 pounds at 45 minutes.

Despite a marked drop in Eastern Fields completions during the week, reports from all sections indicate steadily mounting activity. Major companies have staked many new locations in the Illinois field, the majority of which are not made public until operations are started. There are upwards of 70 wells at various drilling stages in this field. Indiana is seeing an increase in leasing and exploration work, especially in southwestern counties, and the next few months is expected to bring several tests to the lower horizons in that region.

New Kentucky Pools Busy

Ten wells are drilling in a new Kentucky pool, a short distance from the Livermore pool. The discovery well in this section made 100 barrels a day from the Jett sand and the pool is expected to play an important part in Kentucky production later in the season. Wells drilling are Jett sand projects. The discovery well of the new Wayne County pool, located near Monticello and northwest of the old Wayne County pool, started at 200 barrels a day and is still producing about 125 barrels a day. This section is also very active, with about 25 locations staked and almost as many drilling.

Three producers and one gas well were completed in Kentucky last week, all in Ohio County. Globe Oil & Gas Company et al's Graham 16 had initial production of 65 barrels after a shot. These operators are drilling No. 17 and rigged up for No. 18 on the same property. A 50-barrel producer was completed by Evans, James & Hunt in Cambron Heirs 4. These operators are drilling No. 5 and are rigged up for No. 6. New Deal Oil & Gas Company's Odell Heirs 5 yielded 30 barrels a day after a shot. No. 6 is drilling and No. 7 rigged up. Vickers & Company completed a test on the J. T. Edge farm as a commercial gas well, gauging 300,000 feet after a shot.

Potter County Completions Due Soon

Two Potter County tests on the Pennsylvania side of the New York-Pensylvania deep sand gas fields are due for completion shortly. Potter Development Company is drilling in its well on the L. C. English farm, Harrison Township, after running pipe to 5096 feet. G. L. Cabot, Inc., is running casing to 4975 feet on the R. E. Courtwright farm, same township. This test topped the Onondaga at 4970 feet. One location was announced for Steuben County, New York.

Belmont Quadrangle Drilling Company reported the new location on the Clara Lynch farm, 286 feet from the north line and 204 feet from the east line, Hartville township. Equipment is moving in.

Other Potter County operations consist of: Potter Development Company cleaning out at 5184 feet on the Crawford Estate farm. Keating Township; Ward Wasson Company, shut down at 310 feet on the W. B. Hall farm, Genesee Township; rig is being built on the May C. Haupt farm by Potter Development Company.

In Warren County, Kent Kane et al are moving in on the Government Sur-

face property, Watson Township, while Updegraff remains shut down on location on the C. E. Erickson farm, Elk Township, waiting for the engine.

Tioga County tests made considerable progress during the week. Potter Development Company is drilling at 4295 feet on the C. G. Dearman farm, Middlebury Township, and below 3145 feet on the H. C. Kemp farm, Farmington Township. G. L. Cabot, Inc., is drilling at 1490 feet on the Union Joint Stock Land Bank farm, Brookfield Township.

The wildcat of Potter Development Company on the J. Chapin farm, Rockdale Township, Crawford County, is drilling at 3820 feet, while this company's test on the N. D. Dahl farm, Hayfield Township, is spudding in. McHenry et al are expected to resume operations at 2950 feet on their test on the Stellman farm, Rockland Township, Venango County.

On the New York side of the field, three Steuben County tests were drilling: G. L. Cabot, Inc., below 2955 feet on the T. H. Wing farm, Greenwood Township; Sylvania Corporation, below 2320 feet on the William Hendrickson farm, Troupsburg Township, and Atwater et al on the Herrington farm, Woodhull Township, encountered the Brown shale at 2070 feet.

The test of Kaufman et al was deepened 3 feet to 3387. Located on the Bank Angelica property, Allen Township, Allegany County, it is believed to have passed through the Oriskany sand at 3380-3384 feet. There was no show of gas.

EASTERN FIELDS
Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ATHENS COUNTY—		
Brooks & Johnson, Dalton Snow 2..	¶1	915
Moore Farm Oil Co., Fred S. Moore 3	1	1175
A. D. Townsend, Jacob Niggemeyer 1	¶	1645
BELMONT COUNTY—		
Barnesville Devel. Co., Howard Brown 1	¶	1400
GUERNSEY COUNTY—		
John Bindas, O. C. & R. W. McMunn 1	*	1353
KNOX COUNTY—		
C. O. Moore, L. H. Colgin 2	*	685
MEDINA COUNTY—		
Haray Latshaw, Carl Miller 10	1/3	430
MEIGS COUNTY—		
Ohio Fuel Gas Co., Jasper Edwards 1	*	1538
MORGAN COUNTY—		
Hopewell Gas and Fuel Co., Marshall Tidball 1	¶1	4052
NOBLE COUNTY—		
McKelvy et al, Allen Addis 8	*	1036
John Yerian, Albert Mallet Heirs 11	*	945
VINTON COUNTY—		
Kelch Bros., Mary Geiger 4	3	933
WASHINGTON COUNTY—		
Beardmore Oil & Gas Co., Bertha Winland 1	¶	1398
Frank Edgar et al, Oscar Mitchell 1	*	670
William Harris et al, W. G. Altwater Heirs Lot 4	1	986
J. W. Gorrell et al, Robert Gano 1	*	992
Hall & Henning Co., A. & C. Algeo 5	2	1587

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
CABEL COUNTY—		
National Gas Corp., F. L. Whitaker 2	¶	2925
GILMER COUNTY—		
Kenneth F. Ermich et al, A. E. Goff	¶1/3	1800
KANAWHA COUNTY—		
Columbian Carbon Co., Ida Hughart 1	¶15½	5057
Benedum & Trees, Mary Slack 1	¶	4992
RITCHIE COUNTY—		
Oil & Gas Co., Cokley Heirs 2	¶¼	1700
Southern Oil Co., Alvin Wince 11	¶	1937
Lucas & Mahaney, M. W. Lambert 1	*	2490
UPSHUR COUNTY—		
Cumberland & Allegheny Co., C. W. Teters 1	¶1/5	4060
WIRT COUNTY—		
W. C. Patterson, C. E. Vandevender 25	2	400

PENNSYLVANIA

Company, Well and Location	Init. Prod. Bbls.	Depth
GREENE COUNTY—		
Equitable Gas Co., C. L. Stewart 1	¶	2054
WASHINGTON COUNTY—		
R. M. Duden et al, McDowell Heirs 1	¶1	2325

KENTUCKY

Company, Well and Location	Init. Prod. Bbls.	Depth
OHIO COUNTY—		
New Deal Oil & Gas Co., Odell Heirs 5	30	....
Vickers & Co., J. T. Edge 1	¶1/3	....
Evans, James & Hunt, Cambron Heirs 4	50	....
Globe Oil & Gas Co., et al, Ronnie & Hazel Graham 1	65	....

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY—		
Robt. Lentz, Tr., Raab 1, nw sw ne 16-4n-13w	250	1600
ARENAC COUNTY—		
Devonian Oil Co., Pavy 1, ne sw se 4-20n-4	1610	2450
McClanahan, Signious 3, sw sw se 3-20n-4	480	2463
GLADWIN COUNTY—		
Clark & Johnson, McMahon 1, ne nw sw 36-18n-1w	600	3570
Mammoth, Jacob 2, sw ne se, 10-18n-1w	2600	3620
Franklin Pet. Dev., State A-1, sw nw ne, 11-18n-1w	1440	3620
Mammoth, State A-3, sw ne nw, 14-18n-1w	850	3630
Hyatt-Norton, Campbell 1, sw ne nw, 12-18n-1w	350	3648
Martin, State 1, ne sw ne, 13-18n-1w	150	3644
Sun Oil, Salla 2, se sw sw, 11-18n-1w	110	3637
Salla 3, ne sw sw, 11-18n-1w	100	3635
Salla 4, sw nw sw, 11-18n-1w	1200	3604
Smith & McClanahan, Brenner 2, sw se sw, 11-18n-1w	1230	3621
Brenner 3, nw se sw, 11-18n-1w	1450	3620
Buckwin Oil, State 2, sw nw se, 11-18n-1w	3840	3625
Mammoth, Ockerman 2, ne ne sw, 11-18n-1w	2200	3622
Garfield, Fee 2, ne sw ne, 14-18n-1w	510	3639
ISABELLA COUNTY—		
Wicklund, Durnin B-2, n½ sw nw, 23-16n-4w	105	3727
Denver Oil, Mitchell 2, sw sw se, 34-15n-3w	55	3617
Pure, Ryckman 2, ne se ne, 33-15n-6w	450	3627
MIDLAND COUNTY—		
Pure, Kidder 3, w½ ne ne, 17-14n-2w	*	3450
Bond-Root 20, s½ ne nw, 3-13n-2w	260	3439
Rayner D-4, s½ ne ne, 11-13n-2w	120	3435
Bond A-10, s½ se nw, 7-13n-1w	50	3444
Rex Oil, Huntoon 1, nw nw se, 23-13n-1w	*	3445
GRATIOT COUNTY—		
W. E. Ross, Akin 1, c nw ne, 9-10n-4w	¶2½	1029
MONTCALM COUNTY—		
Bushnell Oil Co., Lott 1, ne nw nw 13-10n-5w	500	3221
R. E. Gallagher, Hayden 1, nw ne ne 25-11n-7w	*	3453
Daily Crude Oil Co., Hollabaugh 1, sw se se, 26-11n-5w	*	3235
MUSKEGON COUNTY—		
West Mich., Cryderman et al 1, c se, 6-9n-14w	¶1	1196
Knapp et al 1, c sw, 9-9n-14w	¶1	1252
Techjma et al 1, c nw, 13-9n-15w	¶1	1230
OGEMAW COUNTY—		
Ide & Glavin's Mahoney 2, sw nw nw, 19-22n-2e	100	2786
WASHTENAW COUNTY—		
Lee Brown's Kehrl 1, nw nw ne, 12-1s-7e	¶¼	4120

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN FIELDS

Work at peak despite bad road conditions.

* * *

Billings producer is important extension.

Mt. Pleasant.—Although a general break-up of the roads threatened to tie up Michigan's oil industry temporarily, this week saw records shattered of long-standing, both from completion and permit angles. A record number of permits surpassing the previous high total of 35 established in July 1935 by 6, was issued by the state department of conservation. At the same time Buckwin Oil Company completed the largest well yet to be drilled in the northern Buckeye pool of Gladwin County, now the state's most prolific producing area. The new producer, located in the adjacent forty north of the discovery lease initialled 3840 barrels daily natural from 3625, 29 feet in the pay and 72 feet in the Dundee lime.

Several other wells were completed ranging from 350 barrels daily up to and past the 2000 barrel mark. Several were in completion stages this week, initialling around a barrel a minute, but without final 24-hour gauges.

Two-Mile Extension

An important extension of more than 2 miles to the southeast of the southern pool was assured this week with the completion of McClanahan Oil Company's Avery Estate in Section 9 of Billings township with an after-acid initial of approximately 100 barrels daily.

In the far eastern part of the state Devonian Oil Company's Peavy 1 in Section 4 of Clayton township, Arenac County, was creating considerable interest as a result of its production jumping from approximately 750 barrels to 1610 barrels. The increase came following an unsuccessful attempt to lift the tubing in order to release a packer. This is one of the few wells in the area to pick up a shallow pay of any significance since the original discovery well came in last fall. It is a mile west of the pool's opener and leads some geologists to believe that it may possibly be the makings of a different pool.

Cannot Stop Gas

Lansing.—The Michigan public utilities commission is without authority to prohibit importation of natural gas from Texas fields to Detroit and Pontiac, Paul H. Todd, commission chairman, advised owners of natural gas properties in the Hinton-Milbrook field who sought to stop piping of gas from southern fields until a market for 5 percent of the open flow of the Michigan field had been found.

IMPORTANT WILDCAT TESTS

ALABAMA

CHOCTAW COUNTY—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, woc 16-in csg 200 ft.

GREENE COUNTY—Willis & Payne's R. C. Lett 2, se nw 6-21n-2e, dk.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, nw sw 9-3n-29e, elev 191 ft, top Tuscaloosa 3060 ft, arr deepen, td 4975 ft, Tuscaloosa.

MOBILE COUNTY — Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, lcn.

ARKANSAS

ASHLEY COUNTY—Joe Modisett & Phillips Pet. Co.'s Stillions Lbr. Co. 1, s½ sw nw 18-17n-9w, lcn under water, rog.

CLARK COUNTY — McLarry & Carlin's Bierne Lbr. Co. 1, ne se ne 22-10s-21w, rur and sd. M. W. Martin's C. L. Cabe 1, nw nw 14-10-20, 10-in csg 80 ft, dr 700 ft.

CLEVELAND COUNTY—J. R. Lockhart's Ida Robertson 1, 36-10-11, ow dd, td 3497 ft.

GRANT COUNTY—Wallace & Staples' W. F. Davis 2, se se nw 23-6-15, fsg 2380 ft.

HEMPSTEAD COUNTY—Root Pet. Co.'s Drake 1, se nw 23-14-24, elev 311 ft, base massive anhydrite 2905 ft, dry and abnd, td 4507 ft. J. R. Birdwell's Duckett 1, 24-13-24, sd 1530 ft shale. Sheppard & Todd's Smith 1, ne sw se 1-11-25, sd 600 ft.

LA FAYETTE COUNTY—King Drlg. Co.'s Walcott 1, c ne sw 36-19-26, 12½ in csg 488 ft, dr 5670 ft, gray shale and anhydrite. A. M. Neely's Meek 1, ne nw 35-19-25, dry in drill stem test 3347-58 ft, sd 3358 ft.

LITTLE RIVER COUNTY—J. G. Strahan's Dierks Lbr. Co. 1, 21-12-28, dr 2284 ft.

MILLER COUNTY — Nivla Oil Corp.'s Merchants & Planters Bank 1, se se 18-15-26, dr 3698 ft. Thad Bryant's Commercial Bank 1, 20-18-28, lcn. W. M. Layton et al's Fee 1 to 10 inclusive on Rector land, 17-20-28, lcns (permits granted); Layton Oil Co.'s Terry to 5 inclusive, 14-20-28, lcns (permits granted); Allred & Allred's E. A. Rector 1, w½ w½ 16-20-28, lcn. Kimbrough et al's Capps 1, ne sw 11-20-28, spd 13⅜ csg 500 ft. E. H. Moore's Dale 1, se nw 24-15-26, spd, dr 1870 ft; Dale 2, se nw 24-15-26, rur. Burnham & Manley's E. A. Rector 1, sec frac 17-20-28, lcn.

NEVADA COUNTY — G. H. Vaughn's Christopher 1, sw se 3-14-20, dr 4426 ft. W. E. Stewart's Mendenhall 1, nw ne 1-14-20 (sec hole), sd 2200 ft.

SEVIER COUNTY—J. C. Brinkley's Dierks Lbr. Co. 1, se ne 14-20-29, spd and sd, high water.

UNION COUNTY—Lion O. R. Co.'s Morgan 1, 18-18-17, flowing 203 barrels oil daily through choke, with 4 mil ft gas, td 5559 ft. Marine Oil Co.'s M. Justiss 1, swc lot 7, nw 18-18-17, rur. Ark. Southern Oil Co.'s G. G. Simmons 1, nw nw 15-18-13, woc 200 ft. Travis & Bull's S. L. Robbins 1, sw ne 12-19-16, rur. Sklar Oil Corp.'s Cordell 1, ne se sw 24-17-16, rur.

CALIFORNIA

FRESNO COUNTY

CANTUA CREEK—Western Gulf's S.P.L. 3, 3-17-15, td 8531 ft, redr to 8525 ft, plug 6450 ft, to test Temblor showings.

KERN COUNTY

PREMIER AREA—Allied Pet. Co.'s No. 1, 29-27-27, rur.

LERDO—Arkelo Pet. Co.'s No. 1, 23-28-26, td 10,056 ft, fsh dr pipe.

KERN FRONT — Barnhart Morrow Cons.' Davis 1-A, 3-28-27, dr shale and sand 2840 ft. Seskayen Oil Co.'s No. 3-A, 17-28-27, td 2890 ft, plug 2870 ft, co.

ARVIN—Bear Mountain Oil Co.'s Tejon 2, 16-31-30, spd April 6, dr. General Pet. Corp.'s Arvin 1, 26-31-29, td 7462 ft, plug 7453 ft, sd.

SO. MERICOPA—E. A. Bender's Robinson 1, 14-10-23, sd 1235 ft. Trans-Line Pet. Corp.'s No. 1, 3-10-23, sd 662 ft

PREMIER—Bojaki Oil Co.'s Bowen 1, 28-27-27, sd 1959 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abondoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
b.s.—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet.*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wosr—*waiting on standard rig.*
n, s, e, w—*north, south, east, west.*	
oih—*oil in hole.*	

GREENFIELD — British American's Smith 1-A, 21-31-27, td 750 ft, abn.

GRAPEVINE—Buffalo Oil Co.'s Tejon 1, 5-10-19, sd 4452 ft. Ohio Oil Co.'s Title Ins. D-1, 21-11-19, dr shale streaks sand 7706 ft. Reserve Oil & Gas Co.'s No. 2-6, 2-10-19, rur; Ritchie 33-1, 33-11-19, td 6030 ft, plug 4990 ft, sd; Tejon 33-2, td 4505 ft, redr to 4476 ft, sd; Tejon 33-3, td 4431 ft, shut in.

SAN EMIDIO—I. L. Burch's No. 1, 3-10-23, dr shale 3100 ft, last 100 ft showed faint cuts.

WASCO—Continental Oil Co.'s K.C.L. A-1, 8-27-24, td 9545 ft, co to 9424 ft, made short flow, killed, to make another prod test. Seaboard Oil Corp.'s K.C.L. C-1, 26-27-24, dr shale 5925 ft.

ROSEDALE—Continental Oil Co.'s K.C.L. B-1, 12-29-26, td 6976 ft, cemented bad place in 13-in, co.

DEVIL'S DEN—Den Pet. Co.'s Bates 1, 20-25-19, td 3651 ft in brown sandy shale, showing oil, to set 8⅝-in. Geo. Goodrum's Baron 1, 24-25-18, spud April 2, dr. Lube Oil Co.'s Gordon 1, 2-25-18, td 4280 ft, to plug and test upper showings.

JASMINE—Doyle Pet. Corp.'s Doyle 1, 15-25-27, td 2956 ft, plug 2882 ft, fsh; No. 2, dr shale 2350 ft.

EDISON—East Edison Oil Co.'s No. 1, 23-30-30, sd 960 ft.

ROUND MOUNTAIN—Eastmont Oil Co.'s Olcese 1, 16-28-29, spud April 9, dr. Pageman & Hennes' No. 1, 10-28-29, rur.

ELK HILLS—Elk Hills Pet. Co.'s No. 1, 14-31-28, dr gray shale 7275 ft.

NO. KERN RIVER—Hub Oil Co.'s No. 1, 8-28-28, dr sand 500 ft.

RIO BRAVO—Mohawk Pet. Co.'s K.C.L. 1, 23-29-25, dr shale 7450 ft. Petroleum Securities Co.'s Wright 1, 23-29-25, spud and sd. Tide Water Associated's K.C.L. 1, 30-29-25, td 9000 ft, abn. Union's Kern Co. 1-34, 34-28-25, dr sandy shale 3774 ft.

TEN SECTION—Shell's Canal 21-14, 14-30-25, dr shale 5650 ft. Superior Oil Co. and Union's K.C.L. 8, 11-30-26, dr shale streaks sand 10,770 ft.

GOSFORD—Signal Oil & Gas Co.'s K.C.L. 1-A, 21-30-27, dr shale and sand 7890 ft.

WEST MOUNTAIN VIEW — Sunset Oil Co.'s Sunset-Starr 1, 17-30-28, spud April 5, dr.

McGUNDEN—Superior Oil Co. and A. T. Jergins' Trust Crome Com. 1, 36-29-28, dr sand and shale 4100 ft.

MIDWAY SUNSET—Valley Oil Co.'s No. 1, 18-32-23, sd 2815 ft.

BAKERSFIELD—Wilshire Oil Co.'s Cohn 1, 35-29-27, rur.

MISCELLANEOUS

HUMBOLDT COUNTY—Texas Co.'s Eureka 1, 22-3-1, td 7418 ft, co.

KINGS COUNTY — Central Calif. Utilities Co.'s Kettleman-Lakeview 1, 11-23-29, td 1207 ft, plug 1193 ft, sd. Dudley Ridge Dev. Co.'s No. 2, 24-23-20, foundation. Pyramid Prod. Co.'s Spreckles 2, 16-24-18, lcn. Kettleman View Oil & Gas Co.'s No. 1, 9-22-19, td 4787 ft, wocs 6⅝-in at 3400 ft. T. G. Norell's Guess 1, 7-21-21, sd 6172 ft. Glen C. Stone's Teiter 1, 25-20-20, td 1040 ft, wocs 8⅝-in at 790 ft. Tri Counties Oil Co.'s Olson 1, 10-23-22, spud April 6, set 10-in at 500 ft. Tide Water Associated's Avenal 2, 35-23-17, dr gray sand 2980 ft.

SAN BENITO COUNTY—Tide Water Associated's Murphy Ranch 1, td 6880 ft, wocs 6⅝-in at 6800 ft.

SAN JOAQUIN COUNTY — Coast Explor. Co.'s T.F.I. 1, 2-3-4, dr shale 2710 ft. Standard's McDonall Farms 3, 24-2-4, td 5155 ft in sand, running formation tester.

SOLANO COUNTY—Amerada Pet. Corp.'s Drouin 2, 25-4-2, td 4463 ft, to test; Emigh 2, 26-4-2, lcn.

SUTTER COUNTY—Buttes Oil Fields' No. 4, 2-15-1, dr shale 5500 ft.

TULARE COUNTY—R. R. Ellis' No. 1, 20-24-23, rur. E. P. Jennings' No. 1, 4-24-23, td 2707 ft, plug 2680 ft, ran liner, bailing; No. 2, 33-23-23, rur.

MONTEREY COUNTY—Amil A. Anderson's No. 1, 15-24-14, dr blue shale 650 ft. Shell's Branch 2, 34-24-10, dr shale 7581 ft. Texas Co.'s Dunphy 1, 30-19-7, dr shale 4377 ft.

SAN LUIS OBISPO COUNTY — Aviation Oil Co.'s Britnall 1, 10-11-35, td 1930 ft, redr to 1200 ft, sd. Barnsdall's K.C.L. A-1, 1-32-20, dr shale 3365 ft. Burkholder Oil Corp.'s Clay 1, 14-10-26, dr blue shale and sand 1627 ft. R. A. Foster's McKee 1, 2-32-23, sd 5087 ft. Gretna Corp.'s Miano 1, 25-30-10, spud April 1, dr. A. T. Jergins Trust's Indian Knob 1, 26-31-12, td 2390 ft in schist, abn. Pismo Pet. Co.'s No. 1, 5-32-13, dr shale 3327 ft. Temblor Oil Co.'s No. 1, 22-31-21, dr shale 585 ft. United Foreign Oil Co.'s Panorama 2, 32-21, sd 2435 ft.

SANTA BARBARA COUNTY—E. C. Arnold's Careaga 1, 8-8-33, grading roads. Julius Dietzman's Fithian 1, 8-4-25, td 1025 ft, co. O. C. Fields' Santa Rita 1, 11-7-33, sd 2064 ft. Daniel Fisher's No. 1, 28-11-28, sd 650 ft. Murdock & Allin's Santa Ynez 1, 16-7-30, material. Nine Springs Oil Co.'s Brinkinhoff 1, 9-7-30, sd 3300 ft. W. D. Shaffer's Houk 1, 9-9-33, sd 5003 ft. Todos Santos Oil Co.'s No. 1, 29-9-34, td 2365 ft, pumping water. Union's O'Donnell 1, 21-10-34, dr shale 3683 ft. Valley Oil Co.'s Chief 1, td 1901 ft, to set 8⅝-in at 1400 ft.

VENTURA COUNTY—Continental Oil Co.'s Casitas 1, 7-3-23, dr hard shale 6014 ft. Honolulu Oil Corp.'s Hobson 1, 23-3-21 (South Mountain), td 6744 ft, plug 3600 ft, abn. Speik Oil Co.'s Speik 1, 35-5-19, dr shale 2141 ft. Giovanni's Vais Scott 1, 4-4-21, rur.

SOUTHERN CALIFORNIA

PICO CANYON—A. G. Burt's No. 1, 36-4-17, dr shale 708 ft.

LYNWOOD—Calizoo Oil Co.'s Saulque 1, 9-3-13, dr 4050 ft.

ARTESIA—Caltana Corp.'s No. 1, 11-4-12, spud April 5, dr 850 ft.

NO. LONG BEACH — Geo. L. Clayton's Clayton 1, 32-3-12, dr sand and shale 4210 ft.

FOX HILLS—Country Club Oil Co.'s No. 1, sd 2930 ft.

EAST WHITTIER—Drillers Inc.'s No. 1, 22-2-11, td 1640 ft, plug 846 ft, sd.

DAVIDSON CITY—Hilldon Oil Co.'s Flood Control 1, 11-4-13, td 5732 ft, pumping 75 bbls, 26 gravity clean oil, may deepen.

WEST COYOTE—Hogan Pet. Co.'s McNally 1, 23-3-11, dr sand and shale 3924 ft.

NEWHALL — Holbrook Pet. Co.'s Newhall Land 1, 28-4-16, dr hard brown shale 5077 ft.

WALNUT—Julian & Criswell's Langstaff 1, 5-2-9, dr shale streaks hard sand 1504 ft.

HERMOSA BEACH—Leora Oil Co.'s No. 1, 31-3-14, td 5490 ft, plug 3935 ft, sd.

PALOS VERDES—McClaren Bros.' No. 1, 27-4-14, td 3970 ft, redr to 1800 ft, ran into old pipe, to shoot.

ROSECRANS—Shell's McKinley 4-1, 20-3-13, td 7744 ft, plug 7605 ft, swabbed 20 bbls oil and water, suspended for present.

ORANGE COUNTY—Mesa Oil Co.'s No. 1, (Newport) 29-6-10, dr brittle shale 6756 ft. Shell's Mathis 1 (Anaheim) 23-4-10, td 4690 ft, plug 4460 ft, ran aluminum liner; milling out liner. Thomas & Moulton's Kraemer 1 (East Coyote) 21-3-9, rig.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, massive anhydrite 2434-3066 ft, top Selma chalk 3454 ft, top Eutaw 5322 ft, top igneous rock 6102 ft, move in cas, td 6118 ft.

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, elev 110 ft, fsg for bit, td 1408 ft lime.

POLK COUNTY — Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk.

APRIL-1917

Fig. 1740 Gaso Duplex Piston Timken Bearing Power Pump. 54 to 250 Bbls.

April 6, 1917 . . . war . . . parades . . . draft boards . . . liberty loan drives. A long time ago? Yes, but many a Gaso Pump placed in service in 1917 is still delivering a full quota of service—striking proof that EXTRA strength pays EXTRA dividends in the form of EXTRA service. . . . Gaso Pump & Burner Mfg. Co., Tulsa, Okla. Export Office: 149 Broadway, New York.

Complete Gaso Condensed Catalog, in 1937 Composite Catalog

GASO PUMPS
for every oil industry need

KANSAS

BARTON COUNTY — I. T. I. O. Co.'s Schrepel 1, se se ne 26-20s-11w, p 824 bbls oil 12 hrs. Herndon Drlg. Co. & Morgan & Flynn's Robenseifer 1, cnw 7-8s-15w, set 10-in csg 1076 ft. C. L. Price et al's Kraft 1, sw nw ne 10-17s-11w, p bbl oil per hr & s wtr, ur 7-in csg. C. L. Carlock's Leibel 1, se ne se 18-18s-11w, set 10-in csg 1888 ft, dr 1975 ft. Missouri Valley O&G Co.'s Peach 1, se se se 24-16s-14w, td 3443 ft, D&A. Ralph Wixon & Union O&R Co.'s Frederick 1, nw nw nw 12-16s-13w, dr 2295 ft. Geo. Dickey et al's Boger 1, se se ne 15-16s-13w, dr 293 ft. C. L. Carlock's Ehly 1, ne ne se 5-18s-11w, set 13-in csg 176 ft. C. H. Weaver's Stumps 1, ne ne ne 3-17s-12w, spd. E. F. Wakefield et al's Scheuermann 1, ne ne sw 31-16s-15w, dr 760 ft. Stanolind O&G Co.'s Struder 1, se se sw 26-16s-13w, lcn. S. E. Bailey's Hammeke 1, ne ne sw 12-18s-12w, (owdd, otd 315 ft), set 8-in csg 2095 ft. Stanolind O&G Co.'s Meggars 1, sw sw sw 21-20s-11w, rur.

BUTLER COUNTY—A. M. Landon et al's McCaig 1, ne ne se 13-28s-6e, swb 100 bbls oil 24 hrs. C. L. Seibel et al's Bisnago 1, se se nw 24-25s-6e, dr 1565 ft. Vickers Pet. Co.'s Voth 1, cnl s½ sw ne 32-24s-4e, set 10-in csg 1338 ft, dr 1397 ft. Sid Neff et al's Church 1, sw ne se 8-28s-5e, fsg 1400 ft.

CHASE COUNTY—Hanna et al's Brothers 1, se se nw 25-20s-8w, hfw 3635 ft, dr 3640 ft.

CHAUTAUQUA COUNTY — W. M. McKnab's Griffith 1, sw sw sw 11-32s-10e, dr 560 ft. E. I. Shaffer's Nuckalls 1, nw nw nw 12-33s-9e, dr 900 ft. Iro Scott et al's Lambe 1, sw nw ne 18-33s-13e, sd 410 ft.

COWLEY COUNTY — W. M. McKnab's Weldschmidt 1, sw sw nw 18-34s-6e, td 3520 ft, D&A. McKnab's Community 1, cne nw 14-34s-3e, td 3880 ft, D&A. Wentz & Amerada's Rush 1, nw sw sw 36-34s-6e, td 3046 ft, D&A. Tom Palmers' Lowe 1-A, sw se se 3-32s-5e, set 10-in csg 1804 ft, dr 2005 ft. Ryan Consolidated's Couch 1, sw sw se 13-30s-5e, dr 2050 ft. Elmer Ash et al's Bolack 1, nw nw se 22-32s-6e, rig. Bess & Gralapp et al's Wakefield 1, ne se sw 18-30s-6e, ru.

DECATUR COUNTY—Bruce et al's Newbold 1, cne sw 34-2s-28w, rur.

EDWARDS COUNTY—Royal Pet. et al's Krupp 1, nw nw se 18-24s-19w, surf hole.

ELK COUNTY—Wentz et al's Love 1, sw se ne 35-30s-9e, dr 910 ft.

ELLIS COUNTY—Empire's Samuelson 1, ne ne ne 31-11s-16w, woc. Murphy Oil Co.'s Weisner 1, se se sw 12-14s-19w, ur 8-in csg 3470 ft. Sunray Oil Co.'s Befort 1, ne ne ne 11-14s-20w, td 3914 ft, D&A. Mazda Oil Co.'s Henderson 1, sw sw ne 27-11s-18w, dr 1030 ft. Noble Pet. Corp.'s O'Laughlin 1, nw nw se 13-12s-19w, ur 8-in csg 2745 ft. Earl Wakefield's Putnam Mort. Co. 1, se se nw 32-15s-17w, dr 2430 ft. Ted Kors et al's Koblitz 1, se sw nw 23-12s-18w, testing. Bridgeport Mach. et al's Froelick 1, nw nw se 4-13s-16w, ur 12-in csg 1590 ft. J. C. Shaffer, Inc.'s Staab 1, se se se 25-12s-18w, lcn. J. J. Muth's Penny 1, nw ne se 29-14s-18w, ru. Elwell & Tree Oil Co.'s Wickham 1, sw sw ne 10-11s-19w, rot rig. Billings' Smith 1, se se nw 14-12s-16w, ru.

ELLSWORTH COUNTY — Orville Lee's Larkin 1, nw nw nw 15-16s-18w, spd.

FINNEY COUNTY—Keith & Olson Drlg Co.'s Ely 1, nw nw sw 34-22s-29w, dr 5502 ft.

GREENWOOD COUNTY—Ohio Oil Co.'s Schwab 1, se sw se 9-24s-10e, p 27 bbls oil & 15 percent wtr, 24 hrs. Moncrief's Gruber 1, nw nw nw 5-23s-13e, td 1838 ft, D&A. Shull Drlg. Co.'s Cannon 1, ne se ne 23-25s-12e, set 10-in csg 642 ft, dr 741 ft. Dr. Shippey's Booner 1, ne ne nw 21-26s-2e, sd 1868 ft. L. C. Balwanz' Travellers Ins. Co. 1, csw sw 23-26s-10e, set 8-in csg 918 ft, dr 1138 ft.

HAMILTON COUNTY—Denver P&R et al's Porter 1, sw sw ne 30-20s-41w, lcn.

HARPER COUNTY—Carter Oil Co. et al's Seihart Estate 1, csw nw 4-34s-8w, fsg 4350 ft.

HARVEY COUNTY—E. I. Shaffer et al's Epp 1, se se sw 15-23s-3w, lcn.

KEARNEY COUNTY—J. L. Murphy's Masonic Home 1, cnw¼ 1-25s-36w, rur.

LOGAN COUNTY—Rosespring Drlg. Co. et al's Wright 1, cse se 12-15s-35w, fsg 4025 ft.

LYON COUNTY—Clyde Fred et al's Bruce 1, nw nw nw 13-18s-10e, woc. Davis & Sory's Byrd 1, sw sw se 32-21s-11e, rum.

McPHERSON COUNTY—Hutchinson O&G Co. et al's Berg 1, sw sw se 15-20s-3w, ur 8-in csg 3080 ft. Wamhoff et al's Nuse 1, se se sw 18-18s-4w, set 10-in csg 110 ft, woc. Bradley Bros.' Barnholt 1, sw sw se 30-20s-5w, sd 850 ft. Fred C. Frank et al's Doles 1, se nw ne 12-19s-1w, sd 600 ft.

MITCHELL COUNTY—Geo. Seidhoff et al's Greiss 1, sw sw se 16-8s-10w, dr 2620 ft.

NESS COUNTY—Newton Dev. Co.'s Tenny 1, nw nw se 19-18s-25w, ur 6-in csg 4052 ft. Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, rig. Patton & Paul's Lank 1, se se sw 35-18s-21w, lcn.

OSBOURNE COUNTY—J. E. Waldron's Neuschwanger 1, se ne nw 11-8s-14w, sp & sd.

PAWNEE COUNTY—Canshaw et al's Riederer 1, cw½ nw se 29-21s-19w, woc.

RENO COUNTY—Clyde Pulse et al's Payne 1, sw nw ne 4-22s-7w, p 18 bbls oil 3 hrs & 2 bbls wtr per hr, 1000 gal. A. Foraker et al's Hiett 1, se sw ne 34-24s-4w, td 4031 ft, D&A. Atlantic's Page 1, se nw nw 19-23s-7w, hfw 3695 ft, dr 3745 ft. Olson Drlg. Co. et al's Herriman 1, nw nw nw 22-24s-8w, dr 3518 ft. Imo O&G Co. et al's Watkins 1, se se se 14-22s-7w, dr 550 ft. Westgate-Greenland Oil Co.'s O'Sullivan 1, sw sw ne 24-23s-5w, rust. Sinclair Prairie's Nett 1, nw nw se 32-26s-4w, rur. Helmerich & Payne's Benson 1, ne ne ne 5-25s-6w, otd 4195 ft, dd to td 4223 ft, D&A.

RICE COUNTY—T. C. Johnson's Schubert 1, sw sw sw 9-20s-10w, set 6-in csg 3083 ft. L. E. Douglas' Coyne 1, ne se se 24-21s-8w, sd 2415 ft. John Hanna et al's Fulton 1, nw nw ne 24-19s-6w, dr 2450 ft. Manning & Martin et al's Mathes 1, se sw ne 27-21s-8w, td 3710 ft, D&A. Roy Ramsey et al's Malone 1, nw nw ne 1-20s-10w, td 3310 ft, D&A. C. E. Skiles et al's Helmer 1, nw nw ne 7-19s-8w, ru. Skelly Oil Co. & Ewers Simpson Oil Co.'s Linville 1, sw nw ne 2-20s-10w, core and run 7-in csg. Fred Phillips et al's Hubenett 1, sw ne sw 23-20s-6w, dr 1790 ft. W. E. Witt et al's Fair 1, ne se se 4-22s-8w, set 12-in csg 228 ft, dr 1545 ft, Union O&R Co. et al's Baker 1, sw sw ne 33-20s-6w, set 13-in csg 1500 ft. Comanche Oil Co.'s Cramm 1, sw sw se 15-19s-9w, lcn. Hipple et al's Wernet 1, ne ne nw 11-20s-6w, br.

BROOKS COUNTY—Snowden & McSweeney's Hindman 1, ce½ nw 35-7s-17w, p 20 bbls oil per day. Lester & Dean's Burtt 1, se se ne 29-10s-20w, co 2485 ft. Phillips Pet Co's Manquist 1, sw sw nw 9-9s-17w, woc 1100 ft. Jones Bros. Drilg Co's Wiss 1, nw nw nw 8-10s-8w, dr 1893 ft. Basin Oil Co's Baxa 1, ne ne ne 23-9s-17w, ur 8-in csg 2900 ft. Buckner & Schoff's McConnell 1, ne ne ne 34-6s-18w, sd 3195 ft. Twin Drlg Co's Doughty 1, sw sw sw 15-8s-19w, dr 3347 ft. S. C. Hoel et al's Ives 1, sw sw ne 11-7s-18w, ru. Brunson Drlg Co et al's Casey 1, se se ne 22-9s-16w, br.

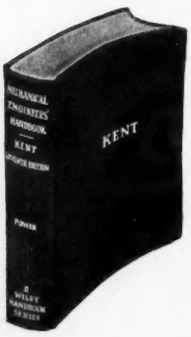
RUSH COUNTY—S. A. Murphy et al's Roth

FOR VALVES that stand up — year after year — rely on Ludlow. Ludlow installations on oil and gas lines may be depended on for years of trouble-free performance.

Rely on Ludlow, too, for the right valve for any job. Whether standard or special types — every Ludlow valve is carefully constructed throughout of finest materials. Write Ludlow for complete information.

The LUDLOW VALVE MFG. CO.
TROY, NEW YORK

Now Available



The POWER Volume of

KENT

MECHANICAL ENGINEERS' HANDBOOK

Eleventh Revised Edition

ROBERT T. KENT,
Editor-in-Chief
and a staff of specialists.

This volume deals with the entire field of power and its applications that are of interest to the mechanical engineer, while present-day methods in design and shop practice will be covered in detail in the forthcoming second volume of the handbook, to be ready in 1937. Basic mathematics, physics and chemistry have been removed to a separate volume.

Contents of the POWER Volume: Air; Water; Heat; Combustion and Fuels; Steam; The Steam Boiler; The Steam Engine; The Steam Turbine; Condensing and Cooling Equipment; Refrigeration and Ice Making; Heating, Ventilating and Air Conditioning; Internal Combustion Engines; Gas Producers; Transportation; Electric Power; Power Test Codes; and Mathematical Tables.

POWER: 1252 pages; illustrated; 5⅝ x 8⅝; $5.00

Send orders to

GULF PUBLISHING CO., P. O. Drawer 2811
Houston, Texas

1, nw nw sw 21-16s-18w, td 2650 ft.; Est 15,000,000 cf gas; rig burned. Duee & Brouk's Lebsack 1, se se ne 13-16s-16w, rig.

RUSSELL COUNTY—S. A. Murphy et al's Deines 1, se se sw 36-15s-15w, set 10-in csg 965 ft. Goldstein & Vernon O & G Co's Steinert Estate 1, ne se sw 34-15s-15w, ru. Empire O & R Co's Vaughn 1, sw sw sw 17-14s-14w, td 3034 ft.; 3000 gals A; P 1482 bbls oil & 5 per cent wtr, 22 hrs, Comp. Aylward et al's H. Jones 1, se se nw 22-14s-13w, mim. Equity Gas Co's Harbauk 1, nw ne sw 19-13s-12w, set 10-in csg 777 ft.; dr 930 ft.

SALINE COUNTY — Ryan Consolidated's Weurth 1, sw sw nw 28-14s-2w, td 3415 ft, D & A.

SEDGWICK COUNTY — Cameron et al's Smith 1, sw se se 13-27s-2e, set 5-in csg 2900 ft.; dr 2983 ft. Swearer' et al's Thome 1, sw sw nw 19-28s-1w, rust. Roxanna Drlg Co et al's Woodman 1, sw nw sw 26-26s-1w, fsg 2094 ft. Empire O & R Co's Kimel 1, nw nw nw 4-29s-2w, dr 3667 ft. E. B. Shawver's Furman 1, sw ne se 24-29s-3w, set 20-in csg 60 ft; dr 604 ft.

STAFFORD COUNTY—Empire O & R Co's O'Conner 1, ne ne ne 17-24s-15w, set 7-in csg 4133 ft, woc. Young et al's Murphy 1-A, se nw ne 32-21s-11w, fsg 1380 ft. Trigg & Vernon O. & G. Co.'s Andrea 1, se se se 4-23s-12w, td 3735 ft, D&A. W. P. Faulkner's Schultz 1, se se ne 6-22s-13w, rot rig.

SUMNER COUNTY—Graham et al's Dawson 1, nw nw nw 4-33s-2w, dr 4170 ft. E. B. Shawver's Bryan 1, cw½ w½ sw 36-30s-2w, run 7-in csg. The Texas Co's Harper 1, ne sw se 9-30s-3w, cor 3020 ft. Faulkner et al's Nevitt 1, ne nw ne 36-32s-2e, (OWDD; OTD 3570 ft); co 2875 ft.

NORTH LOUISIANA

BIENVILLE PARISH—Lide, Greer et al's W. J. Smelley 1, se nw sw 18-16n-4w, 10-in csg 2634 ft, dr 2789 ft. McDowell et al's Locke 1, 9-15n-10w, dr 2743 ft. DeSoto O&G Co.'s Wm. Ashley 1, sw se 15-16n-10w, mim.

BOSSIER PARISH—Ark. La. Gas Co.'s Wilson 1, sw se sw 8-17n-11w, woc 4274 ft. Haynes Drlg. Co.'s A. J. Murff 1, 35-17n-12w, arr set 4600 ft 6⅝ in csg, td 6112 ft. Producers O&G Co.'s Johnson 1, 5-17n-11w, rur. Hill Est. 1, 5-17n-11w, dk. United's Skannal I-1, sw sw 25-17n-12, swabbing so, td 5175 ft. Henderson 1, 36-17n-12w, coring 5796 ft; Webb Unit 1, 23-17n-12w, running csg, td 5172 ft.

CADDO PARISH—Fallon Oil Co.'s Cupples 1, 24-16n-13w, massive anhydrite 4323-4508 ft, arr abn, td 5800 ft. W. J. Hunter's N. B. Stoer 1, sw ne 10-15n-15w, top Blossom 2149 ft, dr 2725 ft. R. W. Norton's Payne 1, se se 27-23n-16w, coring 9058 ft. Prairie River Synd.'s Hutchinson 1, 15-15n-12w, dr 7454 ft, hd gray sand. Ferguson et al's Huckabay 1, 26-22n-16w, sd 2200 ft.

CLAIBORNE PARISH—J. B. Bond's H. E. Patton 1 and 2, nw nw 36-21n-5w, lcns. J. R. Bevill et al's (Shreveport Oil Corp.), Alex Edmonds 1, ne ne 16-20n-5w, spd (8000 ft test). Gulf's H. E. Patton 1, 36-21n-5w, base massive anhydrite 4230 ft, cored broken anhydrite and lime 4214-44 ft, so, sr; H. E. Patton 2, 36-21n-5w, dr 4205 ft; H. E. Patton 3, 36-21n-5w, dr 3310 ft shale; H. E. Patton 4, 36-21n-5w, dr 2451 ft chalk; Bennett 1, 31-21n-4w, dr 4080 ft anhydrite. Lisbon Oil Company's J. W. Burgess 1, se ne 3-20n-5w, elev 354 ft, base massive anhydrite 4212 ft, top Travis Peak 5406 ft, oil stains in sand 5444-63 ft, sd 5800 ft. Lyons & Neely's Maggie Patton 1, 31-21n-4w, dr 3560 ft red beds. T. L. James & Co.'s H. W. Patton Est. 1, 36-21n-5w, dr 2210 ft chalk; H. W. Patton Est. 2, 36-21n-5w, 9⅝ in csg 817 ft, woc; H. W. Patton Est. 3, 36-21n-5w, lcn. Love Pet. Co.'s H. E. Patton 1, 36-21n-5w, dr 4270 ft anhydrite; H. E. Patton 2, 36-21n-5w, lcn; H. E. Patton 3, 36-21n-5w, dr 2415 ft; H. E. Patton 4, 36-21n-5w, lcn. Magnolia Pet. Co.'s H. E. Patton 1, nw se sw 36-21n-5w, mim. L. O. McMillan & De Armand's H. E. Patton 1, 36-21n-5w, woc 9⅝ in csg 900 ft; Vaughan 1, c s½ nw 36-21n-5w, 9⅝ 841 ft; Maggie Patton 1, 31-21n-4w, dr 4165 ft anhydrite; Maggie Patton 2, 31-21n-4w, lcn; McDonald 1, 31-21n-4w, lcn. E. T. Oakes et al's Patton Est. 3, ne nw ne 1-20n-5w, dk and rur. Oden & Evans' H. W. Patton Est. 2, se se 36-21n-5w, woc 10¾ in csg 850 ft. Red Iron Drlg. Co. & Scout Oil Co.'s H. E. Patton 2, 36-21n-5w, dr 3140 ft. J. C. Tippett et al's H. E. Patton 1, 36-21n-5w, rur. Standard of La.'s R. D. Baker 1, nw nw 27-19n-7w, dr 5877 ft. United's Warren Brown 1, se ne 1-19n-6w, testing 5745 ft.

DE SOTO PARISH—Sundby et al's Garland 1, se nw 7-14n-14w, elev 300 ft, top first anhydrite 4228 ft, sd 5583 ft. Stevens et al's Leslie Golden 1, se sw 2-11n-16w, lcn. Benedum & Trees Oil Co.'s Clifton 1, ne nw 33-13n-12w, elev 199.2 ft, top massive anhydrite 4096 ft, dr 4844 ft shale and lime. Chamberlin et al's Lanier 1, 29-11n-11w, rur. Pearl Oil Corp.'s Joyner 1, 28-11n-12w, 8¼ in csg 2885 ft, sd for heavier rig 3000 ft. L. S. Fite & Grogan Oil Co.'s Ramsey 1, 36-11n-11w, rur to test so, td 3027 ft (old well).

FRANKLIN PARISH—Jensen et al's Grayson 1, c ne 36-12n-6e, rur.

GRANT PARISH—Horace M. Smith Corp.'s & McConnell Oil Co.'s Ivy McNeely 1, swc 16-6n-3w, woc 20-in csg 30 ft. H. Weir's Quin 1, 10-7n-3w, spd and completing rur.

LINCOLN PARISH—E. T. Oakes, Easton & Evans' R. L. Sanderson 1, nw nw 30-18n-1w, dk. Lyon & Neely's H. W. Patton 1, c n½ nw nw 6-20n-4w, mim (Lisbon district).

RAPIDES PARISH—R. D. Webb's Brasher 1, 22-4n-2w, dr 4793 ft. C. L. Decker's Lee Lbr. Co. 1, se ne 21-5n-3e, dk.

SABINE PARISH—Earl F. Fox's L. B. Blankenship 1, 13-9n-12w, co, sg, arr set csg, td 3411 ft. Kirk-Greenway, Inc.'s Whitney Corp. 1, nw nw 8-9n-13w, dr 5003 ft.

TENSAS PARISH—H. M. Jones' Chicago Mill & Lbr. Co. 1, nw sw nw 20-12n-10e, 8⅛ in csg 776 ft, blew out gas and sand, td 787 ft.

WEBSTER PARISH—Bass Drlg. Co.'s Tom Crichton 1, nw nw 21-20n-9w, 20-in csg 240 ft, dr 500 ft. Magnolia Pet. Co.'s G. W. Cole 2, ne nw 27-21n-10w, mim. D. G. Cox 2, 22-21n-10w, dr 4440 ft; Ira Cox 6, 23-21n-10w, lcn. Ohio Oil Co.'s A. J. Hodges 2, 23-21n-10w, dr 7242 ft; A. H. Gray 1, Acct. 2, 26-21n-10w, dr 7147 ft; S. P. D. Coyle 1, 23-21n-10w, dr 6845 ft; R. M. Coyle 2, 22-21n-10w, dr 5935 ft. Standard of La.'s Stewart 1, 32-21n-10w, dk. Woodley Pet. Co.'s Gray B-4, 27-21n-10w, dr 7145 ft.

SOUTH LOUISIANA

ACADIA PARISH—Humble's Nordyke 1, Ebenezer prospect, 23-10s-1e, dr shale 1042 ft.

CALCASIEU PARISH—D. & D. Oil Co.'s Lutcher Moore 1, nw of Starks, 1-8s-13w, fsh 8447 ft.

CAMERON PARISH — Magnolia's Albert Dobbertine 1, Johnson Bayou prospect, 9-15s-14w, dr shale 5219 ft. Southern Oil Co.'s State Maritime 2, 15s-10w, sd 2611 ft. Union Sulphur's Hebert 1, Big Lake area, dr sandy shale 7419 ft.

EAST BATON ROUGE PARISH—Cavalier Oil Co.'s Elliott 1, n of Hope Villa, 3-8s-2e, ru.

EVANGELINE PARISH — Bel Cherey Springs Oil Co.'s Fee 1, 10-2s-1w, sd 2214 ft. Continental-Humble's Pardee Lbr. Co. 1, Reddell area, 18-4s-1w, dr shale 7439 ft.

IBERIA PARISH—Jefferson Lake Oil Co.'s Lake Peigneur 414, Jefferson Island dome, 12s-5e, preparing to drill deeper at 6945 ft.

JEFFERSON DAVIS PARISH—Louisiana Crusader's L. Langley 1, Fenton area, 36-7s-5w, dr shale 2345 ft. Stanolind's Calcasieu National Bank 1-B, China prospect, 28-7s-3w, digging pits; same operator's United Life Insurance 1, Hayes prospect, 16-11s-5w, dr shale 9231 ft; same operator's Calcasieu National Bank 2, South Jennings area, 10-10s-3w, lcn.

LA FOURCHE PARISH—Fohs Oil Co.'s State Long Lake 1, Bourg prospect, 65-17s-19e, dr shale 6734 ft. William Heliz' City of New Orleans 1, Marchland prospect, 19-23s-23e, preparing to pb from 7549 ft.

PLAQUEMINES PAARISH—Gulf's State Bay Adams 1, in Bay Adams, 32-19s-28e, dr shale 4134 ft.

ST. BERNARD PARISH—Gulf's Lake Lery 1, Lake Lery prospect, 28-14s-14e, dr shale 5838 ft, Southern Sulphur Co.'s State 2, in Lake Borgne, 38-14s-15e, dr shale 4012 ft.

ST. CHARLES PARISH—Amerada-Louisiana Land & Exploration Co.'s State Bayou Des Allemands 1, Black Prince Island prospect, 13-15s-20e, driving piling.

ST. LANDRY PARISH—Shell's Boagni 1, ne of Cankton in Bristol area, 48-8s-4e, fsh 7318 ft.

ST. MARTIN PARISH—Joe E. Lilly et al's R. Martin 1, Section 28 prospect, 32-10s-7e, ru. The Texas Co.'s State Mongouloi 3, Lake Mongouloi prospect, 14-10s-9e, dr water sand 7421 ft; same operator's St. Martin Land Company 9, Henderson salt dome, 21-8s-7e, waiting on casing 8858 ft.

ST. MARY PARISH—Texas Co.'s State Bateman Bay 1, Morgan City prospect, 21-16s-12e, changing draw works 8364 ft; same operator's Horseshoe Bayou 1, Wax Lake prospect, 40-17s-9e, dr shale 11,432 ft.

TERREBONNE PARISH—Humble's Elender 1, Houma Gas Field, 23-19s-19e, dr shale 11,717 ft.

MICHIGAN

GLADWIN COUNTY—Bell & Marks' Wineman 1, 9-17n-1e, dr 1900 ft. Pray & Caldwell's Flynn 1, 4-17n-1e, dp 300 ft. Cryden's Gary 1, 34-19n-1w, dr 1600 ft. Gordon Oil's McClure 1, 25-19n-2d, dr 3300 ft.

GRATIOT COUNTY—Bliss' Palmeter 1, 18-9n-1w, dr 500 ft. Bila Oil's Ryan 1, 23-10n-1w, dr 900 ft. Gulf Refining Co.'s Lyon 1, 26-9n-2w, mim.

ISABELLA COUNTY—Gulf's Koch 1, 1-13n-4w, dr 800 ft. Soconoy-Vacuum's Murphy 1, 6-16n-3w, dr 2550 ft.

MISSAUKEE COUNTY—Rex Oil's Meekoff 1, 30-21n-6w, rotating 1700 ft.

MONTCALM COUNTY—Charles Weller's Herzog 1, 12-12n-8w, dr 3300 ft.

OTSEGO COUNTY—Dion Geraldine's Geraldine 1, 34-30n-3w, loc. Barton & Williams' Yuill 1, 9-32n-3w, lcn.

WAYNE COUNTY—Darke Brothers' Truesdell 1, 25-2s-8e, completed dry. Wolverine Drillers' Gardulski 1, 19-2s-9e, dr 2005 ft.

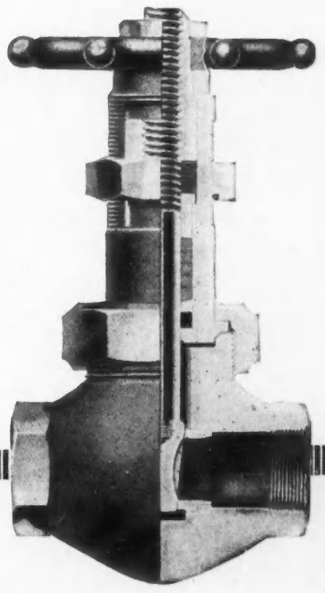
MONTANA

CARBON COUNTY—Bailey Round Butte Oil Co.'s Government 2, cwl ne se 3-6s-23e, fsg for tools at 1260 ft.

PARK COUNTY—Ben W. Ryan's Burgess 1, se sw nw 28-2s-11e, preparing to resume, td at 606 ft.

PHILLIPS COUNTY — R. G. Parrent's Hartman 1, cnw se 12-24n-25e, dr 898 ft.

PONDERA COUNTY—Gordon Campbell's



VOGT

Drop Forged Steel

GATE VALVE

For 600 pounds working pressure at 900 F. —or for 1500 pounds cold working pressure.

Union Bonnet . . . Ground Joint . . . Outside Screw and Yoke . . . Removable Seats . . . Solid Wedge . . . Stainless Steel Trimmings.

Carried in Stock in sizes ⅜" to 2" inclusive.

MAINTENANCE
ENGINEERING CORPORATION
1400 CONTI ST. P. 6338 L.D. 409
HOUSTON, TEXAS

MISSISSIPPI

AMITE COUNTY—Jno. P. Wemple, Tr.'s Southern Forest Land Co. 1, sw sw 29-4n-2e, dr in sdtr hole at 3850 ft, old td 4250 ft.

HARRISON COUNTY—Big Ridge Oil Co.'s Hingin 1, se se 13-7s-10w, rur to deepen, td 2150 ft.

HINDS COUNTY—State of Mississippi's Fee 2, nw nw nw 25-6n-1e, elev 326.5 ft, arr set 2900 ft of 7-in csg and perf after running electrical tester, td 5529 ft (non-marine section basal Trinity).

JONES COUNTY—Snow-Black Pet. Co.'s Cranford 1, s½ nw 29-7n-12w, dr 2105 ft.

LAMAR COUNTY—Sun Oil Co. et al's Mrs. K. Talley 2, nw ne nw 33-4n-15w, dr 2250 ft lime.

UNDERWRITERS' LABORATORIES

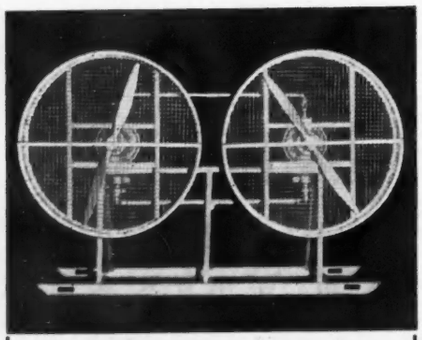
Recommend

ECOLITE 50S

Yes, sir — Ecolite 50S is a safe electric lantern to use in the presence of inflammable gases and vapors. It's handy to carry and is specially made for gaugers, pipe men and all other oil men who need a strong, bright spotlight.

AVAILABLE AT SUPPLY STORES

ECONOMY ELECTRIC LANTERN CO.
325 W. HURON ST. CHICAGO, ILL.



Adjustable . . .
TWIN BUG BLOWER
Sold Thru Supply Stores

The 8 ft. Adjustable Twin Bug Blower has the more efficient two blade 40-inch Airplane type propeller of cast aluminum alloy which is not affected by the weather. Being adjustable this blower will affect more derrick floor area than other types.

GARROTT BRASS & MACHINE CO.
1718 ENNIS ST. HOUSTON, TEXAS

PIKE COUNTY — Acadian Prod. Corp.'s Bales 1, c se nw 24-7n-2w, dk and mir.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, 33-2n-4e, dk and rog.

NEBRASKA

DAWES COUNTY — Stephens Petroleum Corporation's S. J. Palmer 1, nw sw 10-35n-50w, dr 1880 ft.

LINCOLN COUNTY—Smith & Wright's Hansen 1, csw nw 24-15n-31w, dr 2750 ft.

SIOUX COUNTY—J. M. Huber Corporation's Morgan 1, csw sw 32-35n-56w, dr 2750 ft.

NEW MEXICO

LEA COUNTY — Anderson-Prichard Oil Corp.'s E. J. Wells-Conoco 1, c se se 5-25s-37e, elev 3210 ft, dr 1310 ft. Jim W. Brown & Reynolds' Parcell-Conoco 1, c nw se 8-21s-36e, elev 3573 ft, top anhydrite 1616 ft, base salt 2820 ft, cem 5½-in pipe 4200 ft, used 3000 gals acid in lime at 4378 ft, tested little oil with dd to 4401 ft, pb to 4391 ft, sdo. Amon G. Carter et al's E. M. Elliott 2, c ne nw 22-22s-37e, elev 3375 ft, td 3622 ft, dr by tools 3600 ft. J. C. Clower et al's W. H. Turner 2, sw sw se 29-21s-37e, elev 3464 ft, 500 ft oih at 3730 ft, testing. Continental Oil Co. et al's Elliott 2-A-21, c sw se 21-22s-37e, rur. Culbertson, Erwin & Stovall's J. R. Stuart-Repollo 3, ne se sw 10-25s-37e, elev 3111 ft, dr 3040 ft. A. R. Eppenauer et al's F. B. Stuart-Amerada 1, ne ne ne 22-25s-37e, elev 3082 ft, top anhydrite 1000 ft, top salt 1200 ft, plugged off sul w at 3406-3410 ft to 3398 ft, complete flowing 525 bbls 41½ gravity oil natural. J. E. Farrell & Co.'s E. W. Walden-Amerada 1-A, c sw nw 15-22s-37e, elev 3407 ft, rust, td 3551 ft; Walden-Amerada 2-B, c ne sw 15-22s-37e, elev 3392 ft, rust; Walden-Amerada 2-C, c se sw 15-22s-37e, mim. Gulf Oil Corp.'s O. I. Boyd 1, c sw sw 23-22s-37e, elev 3324 ft, dr 770 ft; J. M. Carson 2, c ne sw 28-21s-37e, elev 3452 ft, dr 3295 ft; F. B. Davis 1, c ne ne 8-23s-37e, cem sur cas; C. L. Hardy 1, c se sw 20-21s-37e, elev 3492 ft, dr 3500 ft; E. A. King 2, c nw nw 28-21s-37e, elev 3473 ft, dr 2250 ft; Geo. W. Shahan 1, c nw ne 33-25s-37e, cem sur cas; H. T. Mattern 1-B, ne ne se 30-21s-37e, elev 3483 ft, td 3813 ft, flows by heads; C. D. Woolworth 1, c ne se 30-24s-37e, elev 3266 ft, dr 2215 ft. Humble's J. L. Greenwood 1, c se se 9-22s-37e, mim. Herschbach Drl. Co. et al's Seth Alston-Conoco 1, c sw ne 31-17s-37e, elev 3775 ft, cem 8-in cas 2020 ft, rust. Harry W. Leonard et al's Lanehart-Humble 3, c ne nw 21-25s-37e, elev 3081 ft, dr 1800 ft. Landreth Oil Corp.'s E. H. Grizzell 2, c ne sw 5-22s-37e, mim. Magnolia's State-Hanna 1, c se ne 7-26s-38e, sd for water 938 ft; State 1-G, nw nw ne 24-17s-34e, elev 4019 ft, top anhydrite 1700 ft, top lime 4378 ft, pb fr sul w 4896-4905 ft to 4794 ft, shot 580 qts 4618-4772 ft, pb to 4793 ft, used acid and swab 108 bbls head in 2½ hrs, sd for acid. Maljamar O&G Corp.'s Mitchell 3, c se ne 20-17s-32e, mim. Ohio Oil Co.'s J. W. Grizzell 1, c sw se 5-22s-37e, elev 3431 ft, dr 1750 ft. N. G. Penrose & Rowan-Nichols Oil Co.'s Cary-Humble 3, c se nw 22-22s-37e, elev 3364 ft, dr 3410 ft. Repollo Oil Co.'s Fowler Hair 1, nw nw nw 9-24s-37e, elev 3267 ft, td 3030 ft, co to td after fire; J. T. Lanehart 1-A, td 3281 ft, tested water and show oil; R. L. Mosley 1, nw sw se 34-24s-37e, elev 3156 ft, complete 270 bbls oil and 1,000,000 ft gas initial natural 3344-3390 ft; Frances Stuart 2-B, sw ne se 10-25s-37e, dr 1955 ft. Samedan Oil Corp.'s S. B. Hughes 3, c ne se 4-23s-37e, elev 3311 ft, cem cas, td 3402 ft. Shell Pet. Corp.'s J. F. Black 2, c sw se 21-24s-37e, elev 3219 ft, td 3477 ft, flowed 452 bbls oil 6 hrs, sd for tanks. Skelly Oil Co.'s J. V. Baker 4, c sw nw 27-22s-37e, elev 3341 ft, dr 3610 ft; G. W. Sims 2, c ne ne 9-23s-37e, elev 3303 ft, dr 1780 ft; R. R. Sims 1-C, c se sw 3-23s-37e, elev 3297 ft, td 3388 ft, dr by tools 3365 ft; R. R. Sims 3, c sw se 4-23s-37e, elev 3315 ft, dr 3115 ft; R. R. Sims 4, c se sw 4-23s-37e, rur; E. A. Sticher 1, c ne sw 4-22s-37e, elev 3442 ft, sd 2588 ft. Stanolind O&G Co.'s C. Myers 1, c ne sw 22-24s-37e, elev 3256 ft, shot, td 3552 ft, co 3510 ft; C. Myers 2, sw sw sw 4-24s-37e, elev 3269 ft, dk; C. Myers 3, c ne se 4-24s-37e, mim; P. J. Langlie 1-A, c sw sw 9-25s-37e, lcn; Eva Owens 1, c sw nw 3-22s-37e, elev 3426 ft, dr 1670 ft. Mac Stauffer et al's L. E. Grizzell-I. T.I.O. 1, c nw ne 8-22s-37e, elev 3425 ft, testing 10 bbls oil and 2,000,000 ft gas in pay 3685-89 ft. W. H. Street et al's Wood-Humble 1, near c se ne 22-22s-37e, elev 3355 ft, td 3664 ft, shot 260 qts 3540-3654 ft, co 3600 ft. Sun Oil Co.'s I. R. Stuart 2, c sw ne 15-25s-37e, elev 3106 ft, saturated sandy-lime 3341-82 ft, td 3383 ft, testing. The Texas Co.'s J. P. Alexander 1, c lot 14, 5-21s-37e, elev 3490 ft, top pay 3705-3755 ft, shot 160 qts 3704-55 ft, co bridge at 3655 ft; Jas. F. Black 2, c ne sw 21-24s-37e, elev 3231 ft, co 2975 ft; C. P. Falby 1, c ne nw 8-22s-37e, elev 3435 ft, td 3750 ft, testing; C. C. Fristoe 1, c sw nw 35-24s-37e, dr 140 ft. Tide Water Associated Oil Co.'s R. M. Marshall 1, c sw ne 13-21s-36e, elev 3555 ft, dry on dst at 3710-3870 ft, to dd; Ann Walden 2, c sw ne 21-22s-37e, elev 3360 ft, td 3610 ft, co and flows 150 bbls daily; Walden 3, c nw ne 21-22s-37e, mim.

ROOSEVELT COUNTY—Clovis Dev. Co.'s S. Smith 1, c se ne 17-2s-30e, elev 4597 ft, trace gas 2801-09 ft, sd repairs 2881 ft. Dummitt Oil Co.'s Wm. Todd 1, se se se 34-3n-29e, dr 185 ft.

OKLAHOMA

ATOKA COUNTY—A. J. Sanders' Redden 3, se sw sw 19-1n-15e, td 1260 ft; sd.

BECKHAM COUNTY — Mid-American Oil Co's Biscoe 1-A, sw sw sw 28-8n-22w, td 920 ft; sd.

CADDO COUNTY—Clyde Beck et al's Pharris 1, cse se nw 24-6n-12w, der tools on ground.

CLEVELAND COUNTY — Hollenback's Stinson 1, nw nw ne 17-9n-2w, dr 3088 ft.

COMANCHE COUNTY — C. V. Morris' Young 1, se ne se 24-3n-10w, dr 955 ft. Frank Scott's Kuntz 1-A, cse ne se 21-4n-11w, td 2338 ft; C. Holliday taking over. Stevens' Green 1, se se sw 2-1n-13w, td 1893 ft, D & A.

COTTON COUNTY—W. J. Sherry's Childers 1, sw sw ne 2-15n-7e, dr 3670 ft. M. W. Mosier et al's Holcomb 1, se sw ne 19-18n-8e, fsg 2935 ft.

GARFIELD COUNTY—Arab Oil Co's Harkendorf 1, ne ne ne 34-20n-3w, dr 5440 ft. Ohio Oil Co's State 1, sw sw sw 13-23n-2w, rur.

GRADY COUNTY—Western White Lily Oil Co.'s Stover 1, cse sw nw 33-3n-7w, dr 2053 ft.

HASKELL COUNTY—Continental Oil Co's Anderson 1, sw se ne 33-8n-20e, rig; mit.

HUGHES COUNTY—Wrightsman's Diamond 1-A, se ne ne se 33-9n-9e, td 4280 ft; dst.

JACKSON COUNTY — Ace Gutowsky's Howard 1, sw sw nw 10-3n-19w, Lcn.

JEFFERSON COUNTY—Buffalo Oil Co's Crown-Over 1, cse se nw 21-6s-6w, td 2336 ft; ur csg. Gulf Oil Corp's Woodworth 1, cnw nw ne 20-3s-4w, rur.

KAY COUNTY—G. A. Brown et al's Harris 1-A, sw sw ne 14-25n-1e, sd.

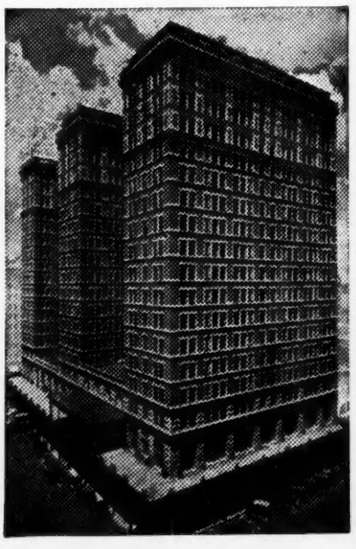
KIOWA COUNTY—Kiowa Oil Corp's Finder 1, csw ne 4-6n-20w, spd 10 ft.

LATIMER COUNTY—Clark Drlg Co et al's Wilson 1, cse se 15-5n-18e, dr 4028 ft.

LINCOLN COUNTY — Anderson-Prichard's Colon 1, nw se sw 28-17n-4e, to acidize. Mid-Continent's Logan 1-A, ne ne se 31-11n-5e, dr 4525 ft.

LOGAN COUNTY—Helmerich & Payne et al's Ruck 1, cne se 9-19n-2w, dr 5144 ft. An-

Houston's Welcome to the World



In the Heart of Houston's Business Section.

1000 ROOMS

$2.50 and Up

Excellent Food at Reasonable Prices in Coffee Shop and Cafeteria

Prompt Garage Service Day and Night

THE RICE HOTEL

R. BRUCE CARTER, Manager
HOUSTON

thony & Marshall's Furin-Eckman 1, se se sw 4-16n-1e, co 4975 ft. Helmerich & Payne et al's Randall 1, sw sw nw 24-16n-1w, rur. Eason Oil Co's Sisters 1, sw sw sw 24-17n-1w, rur.

LOVE COUNTY—Sinclair Prairie's Stockton 1, se se sw 26-6s-2w, fsg 5288 ft. Sadson-Wells- Pierson's Key 1, cse se nw 6-8s-1w, td 3183 ft; sd. Amerada & Stanolind's Westheimer & Daube 1-A, sw se sw 27-6s-2e, td 7363 ft; pb 2970 ft; der out, hole open.

LeFLORE COUNTY—McGraw et al's Tidwell 1, cnw 17-3n-22e, set 10-in csg 2180 ft; set 8-in csg 2340 ft; sd.

MARSHALL COUNTY—Stewart & Taylor's Chestnut 1, ne ne ne 23-8s-5e, P 100 bbls fluid 20 hrs, Est 50 per cent wtr; pull tbng & rods.

MURRAY COUNTY—Russell's Fee 1, se nw se 9-2s-3e, dr 1465 ft. Power Oil Co et al's Lancaster Trust Co 1, csw ne 10-1s-2e, sd. O. O. Owens' Fryar 1, ne se ne 34-1s-3e, der.

NOBLE COUNTY—Lincoln Oil Co et al's Neil 1-A, ne ne ne 15-23n-2w, dr 3560 ft.

OKFUSKEE COUNTY—Mid-Continent Pet Corp's Gofford 1, ne ne nw 35-12n-7e, dr 3220 ft.

OSAGE COUNTY—Norbla Oil Co's No. 1, ne ne se 13-23n-6e, skid rig 25 ft south. Bay Oil Corp's No. 1, nw nw nw 35-24n-7e, dr 1580 ft.

PAYNE COUNTY—H. F. Young's Jenkins 1, se ne se 4-17n-3e, dr 4595 ft.

PONTOTOC COUNTY—E. H. Moore's Muse 1, sw ne se 33-2n-7e, F 73 bbls oil net 24 hrs through tbng. Southern Oil Co's Young 1, ne ne se 17-3n-7e, C & P.

POTTAWATOMIE COUNTY—Champlin Ref Co's Buckler 1, se ne ne 7-6n-4e, dr 4700 ft.

PUSHMATAHA COUNTY—Erle Halliburton et al's Bogwell 1, sw ne ne 30-3s-15e, td 1293 ft; sd.

SEMINOLE COUNTY—Hudson et al's Tanyan 1, se se sw 32-10n-7e, td 4632½ ft; sdo. Sinclair Prairie's Rossanna 1, nw nw sw 28-10n-8e, bailing. J. E. Hall et al's White 1, se nw se 30-6n-8e, shot & swab 40 bbls oil (est) & 30 bbls mud 24 hrs; co at 1280 ft. Amerada & Stanolind's Reed 1, se sw se 19-10n-8e, td 165 ft; run cem. Ross Oil Co.'s Johnson 1-A, ne ne sw 24-10n-7e, td 3567 ft, D & A.

STEPHENS COUNTY—Edward's Fredrick 1, ne se nw 31-2n-8w, dr plgs 2754 ft; sho wtr; may recem. Carter et al's Harley 1, cne ne 24-2s-4w, dr 4347 ft. Wm. Angle et al's Posey 1, cnw nw 8-1n-8w, cor 5142-5410 ft; SO & dr ahead. Helmerich & Payne's Graham 1, csw sw ne 12-1n-5w, testing 5014 ft. Ed Parson's Olson 1, csw sw 21-2n-8w, td 7002 ft; testing. B. F. Lundy's Calmes 1, cnw sw se 35-1n-4w, dr 3020 ft. Penn State Oil Co's Cole 1, cw½ sw ne 21-2n-8w, dr 2380 ft. Chas. Newsom's Pfile 1, sw sw sw 1-2s-7w, spd 15 ft.

TEXAS COUNTY—Cabot Carbon Co's Castro 1, cnw 19-3n-17ecm, sho wtr 2720 ft; to pb. Missouri Valley Gas Corp's Fitzgerald 1, C Sec. 17-6n-14ecm, rur.

TILLMAN COUNTY—I.T.I.O. Co's Hatler 1, sw se ne 21-3s-18w, bldg der.

WASHITA COUNTY—McWhirter et al's Fee 1, sw sw sw 34-8n-19w, dr 1772 ft.

SOUTH TEXAS

SAN ANTONIO DISTRICT

ATASCOSA COUNTY—Frontier Oil Co.'s Oppenheimer 1, J. Sharp sur 518, td 2770 ft, pb 2437 ft, pump 5 bbls oil and 2 bbls wtr, acidized 2000 gals water increased to 10 bbls oil, 5 bbls on pump. Helvetia Oil Co.'s Susie Pratt 2, F. de la Garza sur, td 3460 ft, testing, pb/td 2432 ft. R. J. Roberts' J. M. Elder 1, D Brister sur 190, dr 3160 ft.

BASTROP COUNTY—J. L. Collins Co.'s W. T. Turner 1, A. Litton sur, dr 1965 ft.

BEXAR COUNTY—Algra Oil Co.'s Edward G. Peters 1, Miguel Gotari sur, dr 645 ft. W. D. Bacon et al's Ida Mae Seffel 1, Jose Arocha sur, fishing 1775 ft. P. N. McCullough's A. W. Bitter 1, Jose M. Baerrera sur 58, sndy sh 487-95 ft, 5-in csg at 517 ft, comp 2 bpd on pump thru perf liner at 490 ft, td 550 ft. J. O. Williams' C. Hoch Est. 1, Jose M. Baerrera sur 58, dr 483 ft.

BURLESON COUNTY—Red Bank Oil Co.'s Nellie Gramm 2, Eliza Santef sur, csg stuck 2430 ft.

CALDWELL COUNTY—J. R. Brinkley Jr. Oil Co.'s W. F. Trammell 2, Robt. H Hunter sur, setting csg 1990 ft. E. R. Cosby's W. H. Cosby 1, Maxwell sur, dr 1500 ft. W. E. Housel et al's Driscoll 1, dr 1246 ft. Kay Oil Co.'s Dunlap Est. 1, Solomon Seal sur, dr 1930 ft. Sherman Nelson's A. B. Etheridge 1, Thad Hunter sur, abnd in Edwards tested sul wtr, td 1990 ft.

DIMMITT COUNTY—Porter & Connor's K. Tideman 1, S&GNRR, will start April 15. Wilcox Oil & Gas Co.'s Light Ranch 1, I&GN sur, dr 3725 ft.

EDWARDS COUNTY—Dan Auld's Rigsby 1, GC&SF sur, dr 1100 ft.

FRIO COUNTY—Amerada, Harrigan 1, Salvador Flores sur, dr 6100 ft.

GONZALES COUNTY—Canoe Creek Oil Co.'s Bolts 1, W. A. Matthews sur, wor.

GUADALUPE COUNTY—Blackmer et al's

BETTER THAN "GOOD ENOUGH"

Rollway Bearings are not built for engineers content to specify one bearing as "good enough" for all purposes. The greater efficiencies of Rollway cylindrical roller, radial, and thrust bearings for certain applications are for the engineer interested in increasing the all around accuracy of his specifications. Our wide experience as bearing specialists is yours for the asking. A Rollway Analysis is the first step. It costs you nothing and may save you much. Write—

ROLLWAY BEARING CO., INC., SYRACUSE, N. Y. Factory Representatives in — Boston, Chicago, Cleveland, Detroit, Philadelphia, Pittsburgh, and Youngstown. Agents: C. W. McNeil, 1813 Second National Bank Bldg., Houston, Texas; D. A. Cant, P. O. Box 402, Tulsa, Okla.; H. G. Mouat, Martin Bldg., Birmingham, Ala.; Precision Bearings, Inc., Los Angeles, San Francisco, Portland and Seattle.

CYLINDRICAL ROLLER ROLLWAY BEARINGS

H-K CLINOGRAPH
also
SURWEL & SYFO Surveying Instruments
SPERRY-SUN WELL SURVEYING CO.
PHILADELPHIA - TULSA - HOUSTON - LONG BEACH - LAFAYETTE, LA. - BAKERSFIELD, CALIF.

Fifteen Years Practical Experience

REPRESSURING

JO H. CABLE

PETROLEUM ENGINEER

Wichita Falls, Texas

William M. Barret, Inc.

Consulting Geophysicists

Specializing in Magnetic Surveys

Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique.

GIDDENS-LANE BUILDING

SHREVEPORT, LOUISIANA

DAVID DONOGHUE

Consulting Geologist

Appraisals • Proration • Statistics

Fort Worth National Bank Building

FORT WORTH, TEXAS

PATENTS

Patents, Trade Marks, Copyrights and Infringement Litigation

HARDWAY & CATHEY

428-29-30 Bankers Mortgage Bldg.

Phone Fairfax 8232 Houston, Texas

JACK A. SCHLEY

Patent Attorney

(Established 1902)

PATENTS—INFRINGEMENTS—OPINIONS

San Antonio—Washington, D. C.

2014 SECOND NAT'L. BK. BLDG.—HOUSTON

1807-11 TOWER PETROLEUM BLDG.—DALLAS

THE FORT WORTH LABORATORIES

Field Gas Testing. Analysis of oil field brines, gas, minerals and oil. Sell Thermometers, Hydrometers and Laboratory Glassware.

F. B. Porter, B.S., Ch. E., Pres.

R. H. Fash, B.S., Vice-President

828½ Monroe St., Ft. Worth, Tex.

HOARD EXPLORATION COMPANY

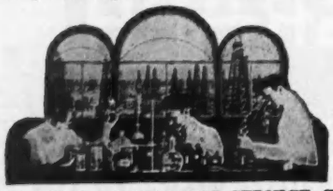
Seismograph Surveys

618 Esperson Bldg.

Houston Texas

GEOPHYSICAL SOIL SURVEYS FOR OIL

10 Sample Survey $50. Total Cost: Mid-West



GEOLOGICAL SCIENTIFIC SERVICE CO.

FORT WORTH 957 E. Davis TEXAS

Mackey 1, James Hodges sur, dr 1020 ft. J. E. Clark's Anderson 1, Robt. Hall sur, coring chalk 2200 ft. Diamond Half Oil Co.'s E. Bibbs et al 1, Joel W. Robinson sur, dr Glenrose limestone 5008 ft. Kennedy & Crowley's Gus Jahns Jose K. Davis sur, set csg 6⅝-in 2363 ft, woc, td 2507 ft. Nick Marosis et al's William Maierhofer 1, L. A. Peters sur, dr plugs and completing as gas well in pb hole at 780 ft, td 2175 ft. Ogden & Reed's Martin Hoffman 1, Green Dewitt sur, lcn. Riddle Oil Co.'s Herff 1, Eligio Gotari sur, sd after cementing liner, td below 2200 ft. S. Robinson et al's E. H. Blumberg 1, M. Baker sur, abnd 853 ft. W. Scott Townsend's Tom Terrill 1, Jesus Cantu sur, moving in new boiler to dd 300 ft td. W. J. Walton et al's P. K. Delany, Jesus Cantu sur, abnd top Edwards 2342 ft, td 2350 ft.

HAYS COUNTY—R. D. Kelly's Donalson et al 1, J. Vermandi grant, redr 890 ft.

KERR COUNTY—S. W. Forrester's Bailey 1, A. L. Starky sur, dr 1100 ft.

MAVERICK COUNTY—J. N. Boicourt's Edson & Estrada 1, James Eaves sur, abnd 2020 ft.

MEDINA COUNTY—Frank A. Brown's Jack Bilhartz 1, J. Campbell sur, owdd td 200 ft.

MILAM COUNTY—W. R. Ritchey's Charles McDermott 1, J. R. Cockrill sur, abnd 3420 ft.

REAL COUNTY—Sun's Dietert & Oppenheimer 1, GWT&PRR sur, hole bridged at 5613 ft, td 5690 ft, lime showing gas prep to run 5½-in csg.

TRAVIS COUNTY—R. M. Kyle's W. D. Hunter 1, J. Burleson sur, lcn.

WILLIAMSON COUNTY—David Kinsey et al's M. Backmeyer 1, H. White sur, abnd 954 ft.

ZAVALLA COUNTY—H. F. Wilcox's T. J. Gillam 1, GWT&T Ry. sur, dr 2890 ft.

LAREDO DISTRICT

DUVAL COUNTY—Atlantic's W. A. Lowe 1, sur 466, dr 4300 ft. A. J. Brinkoeter's P. Garza de Rodriguez 1, sur 212, swabbing 2250 ft of clean oil in hole, CP 150 lbs, likely will not flow, est 100 bbls pumper, td 2656 ft. Clark & Cowden Drl. Corp.'s J. M. Richardson 3, sur 5, ru. Diamond Half Oil Co.'s Sinclair 1, Elizabeth Gravis sur, coring 1860 ft. Frank Gravis' Puig 1, Andres Garcia Heirs gr, dr plugs, td 4655 ft. H. F. Grimm's Mew 1, sur 289, coring 3080 ft. Henshaw Brothers et al's W. H. McGriffin 1, SK&K sur, ru. Hiawatha O. & G. Co.'s Southland 2, Santos Flores Gr, dr 3700 ft. Kepley Production Co.'s Sevier 2, sur 71, Santa Rosalia Gr, lcn. Magnolia's Benavides 23, O'Hern & Seacord sub, abn sw in O'Hern snd, td 2955 ft. Penn-Palangana Oil Co. et al's Gravis 1, sec 250, dr 720 ft. Reynolds & Richardson's Ruiz Est. 1, sec 125, lcn. George V. Viteri et al's Cadena 1, J. M. Hinojosa Gr, lcn. E. R. Thomas et al's Parr 1, E. H. Valentine sur, dst 4660-72 ft, showed 120 ft pipe line oil, 75 lbs pressure in 15 minutes, prep run csg, sand 4659-72 ft. W. H. Wollett & M. D. Masten's Bishop Cattle Co. 1, sur 74, lcn.

JIM HOGG COUNTY—Cole Pet. Co.'s Yeager Ranch 1, sur 452, dr 438 ft. Gifford Oil Co. & Locke Purnell's E. L. Armstrong 2, sur 43, coring 2502 ft.

McMULLEN COUNTY—H. K. Boysen's J. E. Murphy 1, J. E. Murphy sur, sd for repairs 700 ft. Howell Oil Co.'s J. H. Martin Hrs. 1, sur 213, dr 300 ft Humble's Swiger 1, sur 46-AB&M, sd for orders after recovering 1400 ft sw on 10 min dst 3152-60 ft. Edwin M. Jones' Harry Ezzell 3, Ezzell Ranch sub, Thos. Adams sur, ru. Reynolds & Richardson et al's Shiner Ranch 2, Shumway subd, abnd 2008 ft. L. J. Snyder et al's B. C. Claunch 1, M. Hely sur, flowing about 5 bpd, no water, prep to put on pump, td 1058 ft

STARR COUNTY—John H. Clopton et al's Green 1, por 81, 5,000,000 cu ft gas, 425 lbs rp, shows sw, perf 1604-16 ft, td 4620 ft; Dionicio Tijerina 4, blk 12, por 80, dr 1435 ft. Cook, Maris & Arnold's Starr County Cattle Co. 2, Arnold sur, woc after setting sur csg. Danrey Oil Co.'s Cayetano Ramos 1, sur 150, dr plugs 1280 ft. Glen Harroun et al's V. C. Guerra 1, por 55 & 56, fshg 2780 ft. Moss & Heard's S. B. Ricaby 2, por 83, ru to dd, td 1390 ft. Transwestern Oil Co. et al's T. B. Slick Est 2, sec 527, dr 3675 ft.

WEBB COUNTY—Mills Bennett Prod. Co.'s Slator 2, blk 89, dr re-cemented twice, td 400 ft. W. C. Billings' Fee 1, sur 2, dr 150 ft; Fee 2, blk 1, sec 2, comp est 10,000,000 cu ft gas 800 lbs rp, spraying oil, td 2276 ft. Bolling & Coffey's A. Villareal 1, sur 768, pits & wor. Eugene Garner Jr.'s sur 657, set csg 5½-in 1001, woc, td 1006 ft. Kepley Prod. Co.'s W. C. Billings 1, sur 5, dr 820 ft. O. W. Killam's Laurell Bros. 1, sur 333, swabbing oil & wash water, td 2035 ft. LuTex Oil Co.'s Lone Star Con. Co. 1-A, porcions 12, 13 & 14, coring sand 2300 ft. J. W. Magee's E. Garcia (First Nat'l Bank) 1, Garcia Tr., stdg 40 ft. Ohio Fuel Oil Co.'s DCRC 2, dr 1238 ft.

ZAPATA COUNTY—Evans, Mims & Long Bros.' M. Garza Est. 1, C. A. Douglas sub, Comitas gr, dr 50 ft. H. Q. Lewis' S. Benavides 1, Fansler & O'Hern sub, dr 1156 ft. Lundell Prod. Corp.'s I. Ramirez 1, blk 25, Chittenden sub, ru. Westheimer & Daube's E. Lopez 1, sur 288, lcn. Randolph Wheeless' Welsh 1, E. K. Bateman sub, abnd 3015 ft. Zapata Corp.'s Justina Garcia et al 1, share 3, Comitas gr, abnd 1545 ft.

CORPUS CHRISTI DISTRICT

ARANSAS COUNTY—Barnsdall's Edwards 1-A, Wm. Lewis sur, dr 7365 ft. W. J. Collins & Broughton Wilderson's McCampbell Ranch 1, blk 10, McCampbell sub, sd 6560 ft. Wheelock & Collins' Wheeler 1, W. S. Tuton sur, dr 4860 ft.

BEE COUNTY—Dirks Bros.' T. Strauch 2, sec 19, J. M. Uranga gr, comp 145 bpd 5/32 ch, tp 350 lbs, cp 990 lbs, td 4275 ft (?). D. D. Feldman's G. F. Shaw 1, sec 18, sp. Lonnie Glasscock's J. B. Ablinger 1, John Ryan sur, dr sand 4828-45 ft, showed gas and distillate, dst failed, td 4990 ft. W. K. Walton et al's A. M. Holzmark 1, J. A. York sur, dr 3450 ft.

BROOKS COUNTY—Standard Oil Co. of Texas' Mestina O&G Co. 1, coring 1740 ft.

CALHOUN COUNTY—Hiawatha Oil Co.'s Roemer Est. 1, Oliver H. Stapp sur, trying to loosen drill stem stuck at 8300 ft, td 8470 ft.

COLORADO COUNTY—Humble's Relow Land Co. 1, Jos L. Duggan sur, lcn.

CAMERON COUNTY—Stapper Pet. Corp.'s Port Isabell I. R.R. Co. 1, blk 17, Port Isabell I. R.R. Co. subd, dr 6350 ft.

GOLIAD COUNTY—Brown & Wheeler's J. R. Kauffman 1-G, P. Trevino sur, mim, Conroe test. Goliad Oil Co.'s Cole 1, lot 33, Range 4, Goliad town tr, mir.

HIDALGO COUNTY—Daskam Bros.' Osca Daskam 2, por 75, bldg dk. Sterling Oil & Ref. Corp.'s John C. Engelman 1, lot 5, MTL&I Co. sub, testing 8012 ft.

JACKSON COUNTY—Cockburn and T. Hargrove's Santa Theresa Farms 1, I&GN sur, secured 30-day extension. Shell's Mauritz 1-B, O. S. York sur, flowing 90 bpd, 40% sw, testing, td 5704 ft. Texas Co.'s T. N. Mauritz 1, Morris & Cummings sur, flowed 65 bbls, 1,225,000 cu ft gas 24 hrs 3/16 in ch, show 14 bbls wash water, 26.1 gr oil, td 5112 ft.

JIM WELLS COUNTY—John Camp Prod. Co.'s J. W. Bird 1, Los Presenos de Abajo gr, dk. Tom Graham's Jomas P. Luby Est., Los Presnos de Abajo gr, abnd top Vicksburg 5455 ft, td 5793 ft. Magnolia et al's A. A. Seeligson 7, Los Jaboncillos sur, contract let. H. J. Roberts et al's Lem Allen 1, Tr 2, blk B, Wade Ranch, digging pits. Tsesmelis & Reese's Martha Earhart 1, John Suggs sur, coring 2440 ft.

KARNES COUNTY—Victoria Dr. Co.'s John Yanta 1, S. G. Hardaway sur, resuming operations, td 1575 ft.

LIVE OAK COUNTY—R. H. Feltner's Sanger Ranch 2, GC&SF sur, mim. Loma Oil Co.'s L. C. Anderson 1, J. Turner sur, dr. F. D. Salter et al's J. W Griffith 1, J. D. Osborne sur, dr 684 ft.

NUECES COUNTY—I. J. Allen and Seaboard Oil Co.'s J. O. Chapman et al 3, sec 38, flowing 4½ bph, 5056 ft; J. O. Chapman et al 4, sec 38, lcn; J. O. Chapman et al 1-B, sec 37, coring 5120 ft. Camp Prod. Co.'s C. Phillip Wardner, Tr. 1, sec 12, coring 6310 ft. Clarkwood Oil Co.'s H. B. Baldwin 1, blk 11, Russell Farm Lots, dr 2240 ft. Lonnie Glasscock's Kansas Life 1, Luciano Rivers sur, mim. E. M. Jones' Lucy Cooke 1, Quadrilla Irrigation Co. sur, abnd 7424 ft. George E. Robinson, Tr.'s Ollie London 1, sec 1, Laureles Farm tr, lcn. Shell's State of Texas 1, 100.8-ac tr, piling driven and sd. Sloan-Harvey & Green River Oil's Eno Cassens 1, Benton Pasture subd, dr. Southern Minerals Corp.'s King 1, sec 32, dr 5793 ft. Taylor Pet. Co.'s J. V. Styles 1, blk 14 of Rowsey subd, dk. United Prod. Corp.'s W. H. Harvey 1, Garcia sur, dr 7725 ft. Wellington Oil Co. and Seaboard Oil Corp.'s L. M. Dugger 1, Geo. H. Pauls subd, dr 2265 ft.

REFUGIO COUNTY—Wynne Drlg. Co.'s Roache 1, Thomas and Jas. Downey sur, abnd 6526 ft.

SAN PATRICIO COUNTY—Buckingham Oil Co.'s Jean Davis 1, sec 27, Stapper subd, lcn. Conroe Dr. Co.'s T. A. McKamey 1, blk M, Pauls sub, Coleman Fulton Pasture Lands, sp. Eleanor Oil Co.'s J. F. Green Est. 1, T. T. Williamson sur, abnd 7305 ft. Phillips' Henry Schmidt 1, sec 81, Pauls subd of Coleman-Fulton Pasture Co. Lands, set 7-in csg 5560 ft, woc, will perf above, td 7005 ft. Wheelock & Collins' Inez Willis 1, lot 3, blk "E," set sur csg, woc.

VICTORIA COUNTY—Commonwealth O&G Co.'s W. H. Bennett 3, J. E. Galban sur, making 4 bph, td 5476 ft. Union's Keeran 3, M. de Leon sur, gauged 5.94 bph 9/64 ch, tp 880 lbs, cp 1820 lbs, perf 5953-58 ft, td 6605 ft.

WILLACY COUNTY—Ruez-Morton, Inc.'s Armendiaz 1, San Juan de Carricitos gr, dk; Johnson-Stillman 1, lot 14, blk 25, sh 44, San Juan de Carricitos gr, sd 650 ft. Shell's Yturria Land & C. Co. 1, sh 64, San Juan de Carritos gr, 9-in csg 7625 ft, sand 7642-52 ft, dr 8600 ft.

TEXAS GULF COAST

BRAZORIA COUNTY—Pure's Slade 1, Peach Point prospect, S. F. Austin sur, abstract 20, dr shale and pyrite 6818 ft.

BRAZOS COUNTY—Francis Stone Oil Co.'s Graham 1, s of College Station, R. Stevenson sur, reaming 2245 ft.

CHAMBERS COUNTY—Sun's White Estate 1-B, Seabreeze area, Wm. Mays sur, reaming 9637 ft.

FT. BEND COUNTY—Research Oil Co.'s Moore 1, ne of Orchard, S. Kennedy sur, sd 2100 ft.

HARRIS COUNTY — H. J. De Arman's Tyrell & Garth 1, Cedar Bayou prospect, L. Hemingway sur, lcn. H. M. Harrell & O. L. Brace's Bullock 1, ne of Ogburn area, C. Bowman sur, fsh 6581 ft. Stanolind's Oates 1, Clinton area, C. Martinez sur, circulating 8783 ft. Texas Gulf Prod. Co.'s Gillespie 1, Aldine area, S. Contreras sur, testing 7083 ft.

JEFFERSON COUNTY — David B. McDaniel's Gilbert 2, J. G. Grant sur, abn 7886 ft. Magnolia's Phelan 1, sw of Amelia in Cheek area, S. Stivers sur, dr shale 4894 ft. Humble's Jefferson Land Co. 1, Cheek area, C. Hillibrand sur, testing 7834 ft.

LIBERTY COUNTY—Jack Frazier's Hanchey 1, Hardin area, H. B. Johnson sur, dk.

MATAGORDA COUNTY — Continental's Robbins 2, Citrus Grove prospect, C. Franz sur, dr shale 8958 ft. Continental's Hawkins 2, Sheppards Mott, D. McCarthy sur, dk. Sun's Craig 2, Hawkinsville area, J. Williams sur, dr shale 5449 ft. United North & South Development Co. (Receivers), Stoddard 1, sw of Buckeye, Cotton sur, dr shale 9316 ft.

POLK COUNTY—C. E. Gates' Jackson 1, se of Onalaska, E. Clark sur, woc 815 ft. Mayo et al's C. Mayo 1, w of Segno, J. G. Loving sur, dr shale 8049 ft.

SAN JACINTO COUNTY—Cockburn et al's Whitten Estate 1, Keno area, Wm. West sur, lcn.

TYLER COUNTY—Republic's Hurd 2, N. Hurd sur, dr shale 7169 ft.

WALLER COUNTY—N. Blumenthal's Kelly 1, ne of Hempstead, S. Hardin sur, dr shale 4430 ft. Red Bank Oil Co.'s Chapman 1, n of Hempstead, M. Donohoe sur, dr rock 945 ft. Stanolind's Hargrove 1, Katy area, T. S. Reese sur, sec 110, ru.

WHARTON COUNTY — J. F. Hutchin's Wensley 1, J. Tumlinson sur, dr shale 5046 ft. Texas Co.'s Kluck 1, Blue Basin prospect, J. Hyland sur, testing 4657 ft.

UTAH

GRAND COUNTY—Columbia Crude Corporation's Rath-Government 1, ne sw 12-25s-20e, dr plug at 1232 ft, has been delayed by breakdown, td at 2138 ft. Utah-Southern Oil Co.'s Hyde-Government 1, s nw nw 32-22s-20e, sd 6715 ft for heavier equipment to drill deeper.

EMERY COUNTY—Continental Oil Co.'s Unit 1-A, nw nw 27-23s-11e, preparing to resume, td at 1610 ft.

WYOMING

CAMPBELL COUNTY—G. J. Sherin et al's Rhodes 1, ne se sw 24-49n-74w, dr 425 ft.

LINCOLN COUNTY—H. M. Eller et al's 2, e nw sw 32-19n-116w, dr 401 ft with so at 397-401 ft.

NATRONA COUNTY—Summit Oil Co.'s 1, se ne nw 21-33n-90w, dr 1863 ft.

NIOBRARA COUNTY — Riggs Drilling Co.'s A. A. Spaugh 1, se sw sw 32-34n-65w, dr 1430 ft.

PARK COUNTY—General Petroleum Corporation's Government 1, nw nw nw 33-47n-100w, coring ahead at 5850 ft.

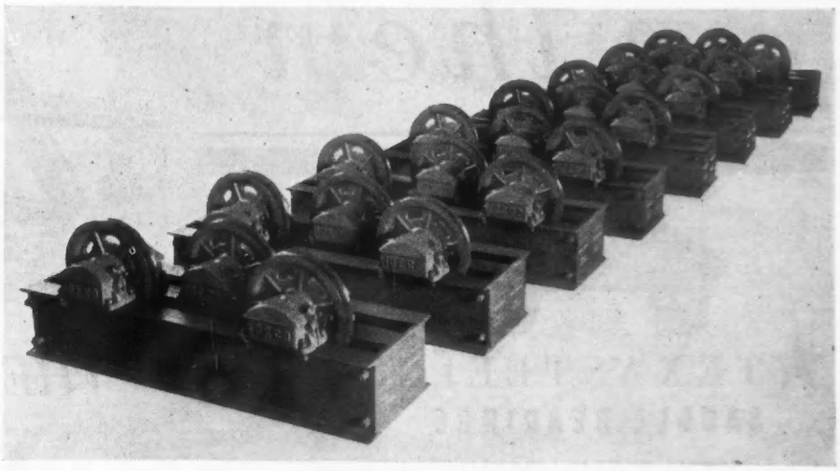
To Shoot Nesson

Minot, N. D.—Operations of Standard Oil Company of California in western North Dakota this year will involve expenditures approximating $400,000, according to A. M. Fruh, who has represented the company in lease negotiations in this area.

A seismographic survey of Nesson Flats prospect, preliminary to starting of test drilling, is to be started shortly after May 1. Thomas W. Leach, Tulsa, Oklahoma, geologist, will direct a crew of 18 to 20 workers in mapping the geophysical structure of the field. The survey should be completed in 40 days. Approximately 140,000 acres in Williams and McKenzie counties is under lease.

BRONZOID

SELF-ALIGNING BUSHINGS ARE NOW "STANDARD EQUIPMENT" ON IDECO TYPE SA-4-15 PRODUCTION CROWN BLOCKS



BRONZOID "76" ASSURES LONGER BEARING LIFE

BRONZOID "76" is recommended for moderately high speed and heavy load conditions, where speeds do not exceed 1,500 r.p.m., nor loads exceed 1,800 lbs. per sq. in. of projected area. Maximum ft. lbs. per minute per sq. in. of projected area: 640,000.

This grade of Bronzoid is especially recommended for such heavy-duty machinery as: Pumping Units, Rock Crushers, Drawworks, Rotaries, Crown Blocks, Locomotive Bearings, Diesel, Steam, and Gas Engines, Thrust Bearings, Thrust Collars, Pump Liners, and Clutch Pulley Bushings.

PHYSICAL CHARACTERISTICS

Yield Point	16,140
Brinell Hardness	38
Tensile Strength	26,367
Elongation in 2"	12½ %

Compression:

7,500	None
7,800	.0006
10,000	.0008
15,000	.0076

Corpus Christi Branch: Port Avenue and Buffalo St. J. S. Cook, Manager

OIL CITY BRASS WORKS
Founders—Manufacturers—Machinists
BEAUMONT, TEXAS, U. S. A.

Houston Branch: 634 No. Edgewood St., L. H. Kennon, Manager

Specify BRONZOID ON YOUR NEXT OVERHAUL JOB

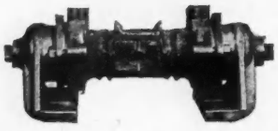
HOUSTON
Cotton Exchange Building

EL PASO
First National Bank Building

F. G. MASQUELETTE & CO.
Certified Public Accountants
Federal Tax Counselors

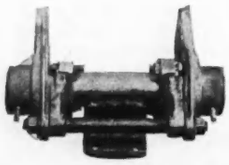
AUDITS — SYSTEMS
INVESTIGATIONS — COST ACCOUNTING

There is more LIFE *in them*



★TEXASTEEL SADDLE BEARINGS

The saddle bearing used on Jacks and Backside Assemblies is fully enclosed, incorporating the stuffing box, oil gland principle. A steel rod through the center, bolted at each end, holds the assembly in line. This permits the repacking of stuffing boxes without removing the beam. This bearing is made in three styles. Type A is bronze bushed, Alemite fitted, grease packed, dirt and dust proof. Type B is same as Type A except not bronze bushed. Type C is machined semi-steel with packed set collar packing gland.



★TEXASTEEL PULL-STRAP BEARING

These bearings have an exclusive, self-aligning feature. They are simply constructed stuffing box, packing gland bearings. A cold-rolled steel shaft is fitted into semi-steel castings which are separated by a large exterior bolt, assuring ample play to prevent freezing. These bearings are made in three distinct types—A, B and C—as in the Saddle Bearings (see above).

..WHEN THEY HAVE THESE ★ ★ NEW TYPE TEXASTEEL BEARINGS

There's sure plenty of life and service in Texasteel Pumping Equipment. The big reason is the *new bearings.* Remember back in the old days when you had to pour a bucket of oil on the bearing areas and then "pray" that sand and dirt wouldn't ruin them too soon. Well, those days are gone. Today the *new, exclusive Texasteel bearings* make pumping more efficient and profitable. *For longer life,* install Texasteel Pumping Equipment.

TEXAS STEEL COMPANY

Manufacturers

WAREHOUSE
KILGORE
PHONE 724

GENERAL OFFICES AND PLANT
FORT WORTH, TEXAS
PHONES: 4-2251—4-2252—4-2253—L. D. 76

WAREHOUSE
HOUSTON
PRESTON 5259

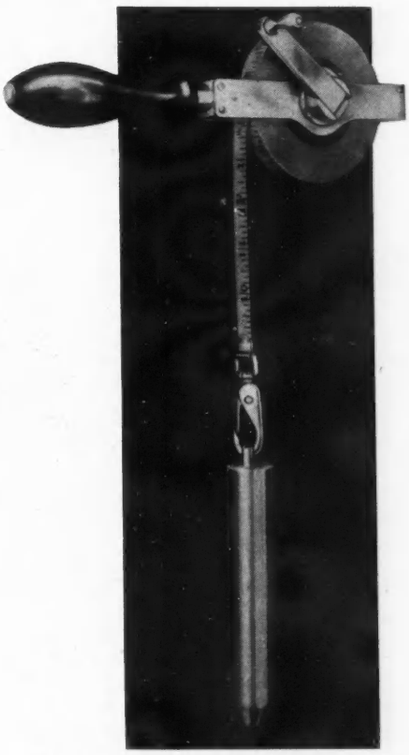
TEXASTEEL

NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Catalogs • Books

STEEL TAPE
Keuffel & Esser Company

Keuffel & Esser Company, Hoboken, New Jersey, has announced "Dallas Wyteface," a new black-on-white steel tape for oil gaugers. This improved steel line has jet black graduations and numbers on a crack-proof white surface, and is as easy to read as a newspaper headline. The background offers a strong contrast with crude oil, and is a real convenience when accurate measurements must be taken under bad lighting conditions.

The Dallas tape is said to have a new resilience that prevents kinking, curling and "lariating." The manufacturer also states that the corrosion-proof surface protects the steel from rust, greatly increasing the useful life of the line. It is extremely easy to clean. Oil, sludge, dirt and grime can be readily removed with a damp cloth. The tape is furnished on a sturdy stainless steel reel, designed to stand up under rough treatment and abuse, and it is fitted with a standard type gauger's bob.

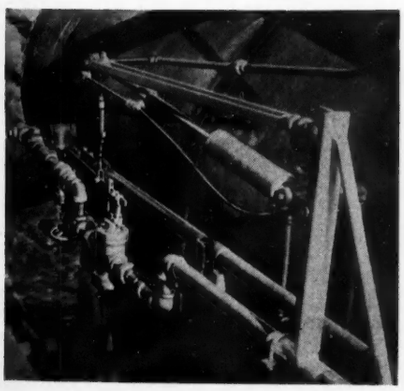


Keuffel & Esser Steel Tape for Tank Gaugers

BOILER FEED-WATER LEVEL CONTROL
J. A. Campbell Company

J. A. Campbell Company, Long Beach, California, has developed a new feed-water level control with extreme sensitivity to maintain levels within one half-inch. It is made in one size to meet all boiler needs and will operate any valve up to 12-inch. Its overall length is 48 inches and it can be operated with or without a whistle. The photograph shows the controller mounted on a fire-box boiler. A different mounting is provided for return-tubular and water-tube boilers.

It is called the Campbell-Cantilever



Campbell Feed-Water Level Control

Boiler Feed-Water Level Controller. It is installed on the side of the boiler and easily accessible. The frame is set so that the water level mark is at the same level as the desired water level in the column. When the water level drops in the gauge glass, water runs down an inclined tube exposing same to the high temperature of the steam at boiler pressure. This instantly causes rapid expansion which is multiplied eight times due to triangular construction. This causes the end casting to move upward, which opens the valve an amount equal to eight times the extent of the expansion.

If the water rises in the gauge, the cooling action of the cool water rising in the tube causes contraction which lowers the end casting and closes the valve by an amount equal to eight times the contraction. This multiplied principle of contraction and expansion assures sensitive regulation heretofore not available, according to the designer. The action is automatic and requires no manual operation or attention from the boilerman. As an extra safety measure, there can be attached either a whistle or an electric signaling device.

There are many applications for the controller other than in boiler-feed regulation.

ROTARY DRILLING CHAIN
Chain Belt Company

Chain Belt Company, Milwaukee, has announced a new type rotary drilling chain, the 3125 REX Chabelco chain in double and single strands. This chain provides several distinct advantages in its use as a drilling chain, it is claimed. It is listed at a minimum ultimate strength of 115,000 pounds per strand. In double strands this minimum rating becomes 230,000 pounds.

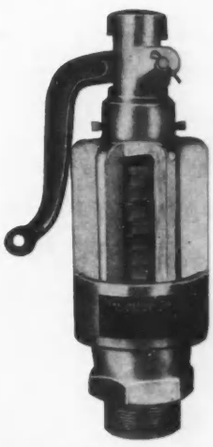
PIPE VISE
The Billings & Spencer Company

The Billings & Spencer Company, Hartford, Connecticut, has announced an improved chain pipe vise with heavily knurled and elongated nut. This new Billings feature provides a gripping surface for more rapidly taking up the slack in the chain. A partial turn of the handle is sufficient to clamp the pipe. Interference between the handle and the bench is avoided, the manufacturer states.

This improved chain pipe vise with the exclusive knurled adjustment nut is made entirely of steel. The base, handle and jaws are drop forged, the latter from special analysis tempered steel scientifically heat treated. The chains are heavily constructed for rugged work. The vise is light in weight yet the drop forged construction insures maximum strength. Made in four sizes, with capacities from ⅛-inch to 8-inch pipe.

SAFETY VALVE
The Inferno Company

The Inferno Company, Shreveport, Louisiana, recently placed on the market a new safety valve that combines both the exposed spring and top outlet features. Six vertical openings in the spring cage expose the spring in the valve for close inspection, and allow the operator or boiler inspector to see the condition of the spring while the valve is in operation. These openings also provide an outlet for the exhaust steam.



Inferno Safety Valve

The new Inferno top outlet exposed spring safety valve is made with a malleable iron spring cage and base, and is provided with a lever for hand-popping. It is made in a 2-inch size, and has a stainless steel stem, rust-proof spring and renewable nickel valve and seat. It is made to conform to A.S.M.E. and A.P.I. standards and is so stamped.

ON YOUR MARK . . .

GET SET . . .

GO! . . . *for greater profits at any distance with*

DARCOVA (Orange Label) the standard for more than 30 years under severe service at all depths.

DARVAL (Blue Label) for service in wells to approximately 2,000 feet in depth.

DARFLEX (Green Label) the popular favorite for wells to 800 feet in depth. The **original** composition valve cups are manufactured

only by

DARLING VALVE & MFG. CO.

WILLIAMSPORT, PA.

This Week with the Industry's EQUIPMENT SUPPLIERS

Girdler Licenses Cities Service to Build Plant

The Girdler Corporation, Louisville, Kentucky, announecs it has granted a license to Cities Service Gas Company, Bartlesville, Oklahoma, to build a plant near Lyons, Kansas, for the removal of hydrogen sulphide from natural gas. Capacity of the plant will be 10 million cubic feet per day.

Dodd New President of Woodwork Supply Company

C. C. Dodd was named president of the Spencer Woodwork Supply Company, organized in Spencer, West Virginia, last week to manufacture wooden equipment for drilling wells and to construct a creosoting plant for treating timbers for rig foundations. Other officers of the new enterprise are Roy L. McCulty, secretary-treasurer, and Gordie Boyles, K. M. Hunt, H. S. Adams and W. B. Reed, directors. John Custer is general manager.

Lincoln Appoints Welding Consultant at Kansas City

The Lincoln Electric Company, Cleveland, Ohio, announces appointment of Don McCormick as arc we'ding consultant for the Kansas City, Missouri, office. McCormick was formerly superintendent for the Sheffield Steel Company of Kansas City. McCormick's work will be under the supervision of E. D. Anderson, who is in charge of the Kansas City office.

Industrial Supply Co. Opens Store at Alice

Industrial Supply Company, Wichita Falls, Texas, April 5 opened a new branch store at Alice, Texas, where a complete line of oil field equipment is being carried.

Braden Winch Company Changes Corporate Name

The Braden Winch Service Company, of Tulsa, has announced a change in its corporate name to Braden Winch Company.

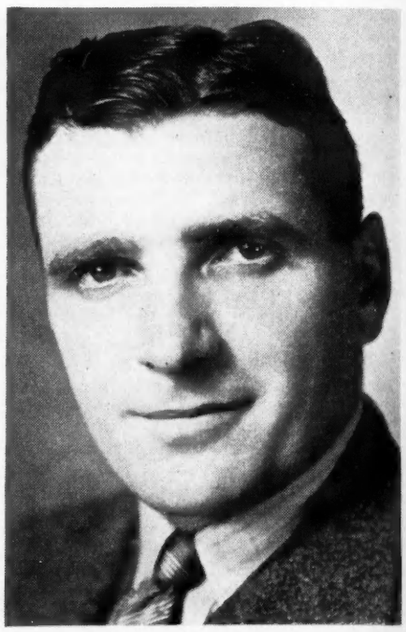
Murray Sales Representative Of American Iron Works

Announcement of L. D. (Jiggs) Murray as sales representative of the Houston, Texas, territory for the American Iron & Machine Works Co. has just been made by officials of that organization. Murray, formerly connected with the Amerada Petroleum Corporation, Bouvaird Supply Company, and the Haynes Drilling Corporation, will make his headquarters at the Houston branch of the company.

L. D. MURRAY

Rector Appoints E. W. Brockman To Mid-Continent Sales

Rector Well Equipment Company announces appointment of E. W. Brockman as sales representative in the Oklahoma-Kansas territory, with headquarters at 310 Thompson Building, Tulsa. Brockman is a graduate in geology from the University of Oklahoma, class of 1934, and since leaving school has worked for Petty Geophysical Engineering Corporation in the Louisiana Gulf Coast, Oklahoma and Kansas.



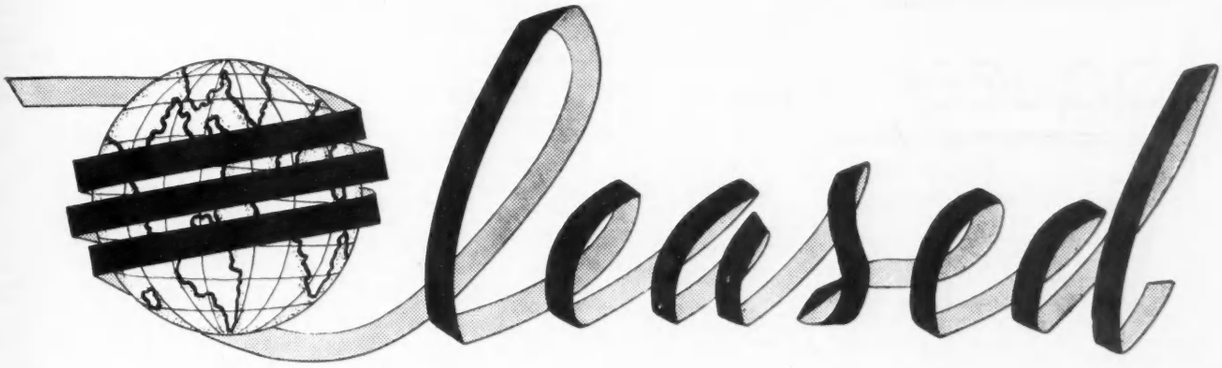
E. W. BROCKMAN
Representing Rector Well Equipment Company at Tulsa.

Lincoln Increases Staff Of Philadelphia Office

Lincoln Electric Company, Cleveland, Ohio, announces appointment of William Sivyer, graduate of the University of Illinois, and B. B. Ross, graduate of Kentucky Wesleyan College, who will be connected with the Philadelphia office.

John C. Slonnoger Joins Continental Supply Company

John C. Slonnoger, formerly engineering representative for Falk Corporation, became assistant chief engineer for the Continental Supply Company April 12 with offices at Dallas, Texas.



. . . all to the end of providing a dependable Natural Gas Service

Imagine a strip of land one foot wide and 8,692,291 miles long —enough to encircle the earth at the equator about 349 times!

Picture an area amounting to that of 509,947 ordinary city blocks!

Think of an acreage nearly six times as great as that of the City of New York!

• • •

Each of these comparisons is only another way of expressing the vastness of the 1,053,611 acres of land which the United Gas System either owns or holds under lease for Natural Gas development —an acreage which, consolidated and set apart, would constitute an area almost as great as the State of Delaware!

The cost of this great lease program is far from small. Yet it is only a part of the cost of providing a *dependable* Natural Gas Service.

UNITED GAS SYSTEM

NATURAL GAS : THE MATCHLESS FUEL FOR HOME AND INDUSTRY

Squeaks from the Bull Wheel

Those Whittier Bullets

My, how the four vertical bullets at Whittier, California, have grown!

On page 9 of the April 5, 1937, issue of The Oil Weekly, you show an illustration of those bullets and state that each one holds 2,000,000 cubic feet of gas under 60 pounds pressure. When we originally built them they held 250,000 cubic feet each.

Chicago Bridge & Iron Company
By M. E. Smith.

You know how things grow in California—and the chamber of commerce has put in some licks since the tanks were put up. Anyway, what is a cubic foot of gas: (1) in the tank? (2) at the consumer's meter?

Classified Ad

LOST, a lead pencil by Jennie Weems, blonde, blue eyes, five feet four inches, good dancer. Finder please call H-1722 between seven and eight p.m.

Accident???

"Mamma, look at that funny man across the street."

"What is he doing?"

"Sitting on the sidewalk talking to a banana peel."

Either One

"If the barometer falls suddenly, isn't that a sign it's stormy?" asks a reader.

Either that, or the nail's come out.

That's Telling 'Em, Judge

Judge—What possible excuse did you have for acquitting that murderer?

Foreman of Jury—Insanity.

Judge—What, all twelve of you?

Dictated But Not Read

"But I thought—" began the typist, meekly.

"It's not your business to think," snapped the manager. "Just you take down what I say, word for word, and keep your own ideas to yourself."

So that afternoon the following letter was brought to him to sign:

"Dear Mr. Browne—Write it with an 'e.' Pure swank—his father was a gardener. With regard to your letter, of whatever date it was, I can quote you the following prices. Hi! Thompson! It's that outsider Browne. How much shall we stick on? Twenty per cent? Make it 30? Righto. Thirty dollars a ton. Awaiting your esteemed order, I am, yours truly. That's settled him."

Accurate Diagnosis

Doctor: (After examining the patient) H'mm! I don't like the looks of your wife at all.

Her Husband: Neither do I, but she is a good wife, looks after the children and the house, so I can't grumble.

Happened at Saxet

Girl (soliciting subscriptions): "I'll take something off if you'll take it for two years."

Roustabout: "I'll take it for fifteen years."

He Would Hold It

Scotchman—"Doctor, what can I do to prevent seasickness?"

Doctor—"Have you a dime?"

Scotchman—"Yes, sir."

Doctor—"Well, hold it between your teeth."

Gotkool
WATER CANS
& COOLERS
GOTT Water Cans are the practical way to keep drinking water cool for long periods, protected from impurities and always handy to the job. Snug fitting large removable top, strongly built to withstand rough usage. GOTT Water Coolers have extra large covers and a handy non-leaking push button faucet. Your Supply Store has them, get one today! . . . . . .
Gott
GOTT WATER CAN
Made in 1½, 3, 5, and 10 gallon sizes.
GOTT WATER COOLER
Made in 3, 5, 8, 10 and 20 gallon sizes.
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

Kidnapping

First Young Hubby: "We had a sensational case of kidnapping in our house lately."

Second: "Really! How did it happen?"

First Young Hubby: "The baby slept the whole night."

Ahead of Them

The three New York business men were enjoying a vacation in the Maine woods. Each one had a repuation as an angler. On one excursion it was agreed that the one who caught the first fish would pay for the dinners that night. One of them, a Scotsman, relating the story later, said: "Would you believe it? Those chaps both had bites, and would not pull up their catch."

"I suppose you lost, then," said the listener.

"Ah, no! My hook wasna' baited."

No Make-up

"How did you manage to evade the photographers who have taken so many pictures of you?"

"Easily," said Miss Cayenne. "I disguised myself."

"How?"

"I threw away my lipstick and washed my face."

Just Wait

Hotel Guest: "You told me I'd get a good view from this room and all I can see from here is the court."

Clerk: "Yes, but wait till the girls across the way get home, sir!"

Partial Literacy

A denizen of the hills of East Tennessee, who was appearing as a witness in a law suit, was being questioned as to his educational qualifications by the plaintiff's lawyer.

"Can you write?" asked the lawyer.

"Nope."

"Can you read?"

"Wa'al, I kin read figgers pretty well, but I don't do so good with writin'."

"How is that?"

"Wa'al, take these here signs along the road when I want to go somers; I kin read how fur, but not whurto."

Pleasant Expectations

"Do you remember that couple we met on the steamer we took such a liking to? I mean the couple we invited to visit us."

"Yeah. You don't mean to say ——"

"Yes, the idiots are actually coming!"

Deceiving

"What do I do when I go to the Zoo?" asked Mike.

"You be careful about the Zoo," advised Pat. "You'll se foine animals if you follow the words, 'To the lions' or 'To the elephants,' but take no notice of the one 'To the exit,' Mike, it's a fraud, and it's outside I found myself when I went to look at it."

Hotel Pilfering

The world traveler was a guest of the management at a private party. He related how an entire hotel was carried across five hundred miles of desert in North Africa, piece by piece.

"That's nothing," declared the hotel manager. "Here in America hotels are carried away, towel by towel."